PUBLIC COMMENTS ON NWL DRAFT STRATEGIES

1. **Wotton, Angela** - NRCS-CD, Houlton, ME angela.wotton@me.nacdnet.net

I read over the draft plan – looks inclusive and I liked seeing a voluntary program for woodlot owners, no matter their size, and making a note about education. Changing people's focus on making this a priority is the hard part, in part because the issue has historically been so politicized. I think that is changing though and post-pandemic we have a real opportunity to make some positive changes. Fingers crossed!

2. **Mike Leach** leachm99@hotmail.com

Item 2A, why is it limited to 10 acres and up?

I own a 5+ acre lot, over 3 acres of which is wooded and bounded by other woodlots with other owners, the contiguous area of which is much more than 10 acres but owned by multiple people. This has always been an issue for small wood lot owners, they get excluded if they don't have the minimum of 10 acres. I would think you would want to be as inclusive as possible.

3. **Michael Hennessey** michaelhennessey11@gmail.com

If CMP wants a corridor, all suitable power lines should be open to solar panel use. Allow CMP to generate on its own land or ROWs if necessary to reach agreement.

Farmland; On April 9 bulletin 20 Farmland was revised. Clarifies that only active acres are taxed at farmland rates. This reduces the acreage that will be enrolled. Not arguing that Farmland Law is well written or that this bulletin revision matches intent, just that it is a step more restrictive is contrary to preservation.

Minimum lot sizes. enough said.

Stream bank preservation, increasing stream tree shading is a worthy area of tax incentives.

4. **Penny Gray** nadianichols@aol.com

Just read through your climate council strategies and was very glad to see that Maine's forests are being recognized for their importance in making us carbon neutral. They're almost doing that right now, but our commercial harvesting practices are not promoting the best forestry management, and the use of biomass (chipping whole trees for heating/energy) is not helping matters at all. Nothing's being left on the forest floor and won't be until the biomass energy plants using wood pellets are shut down.

I'd like to suggest that Maine Public Lands be managed as sustainably as possible. Perhaps even a few trees could be allowed to grow into real trees. The lands around my father's cabin on Barrett Pond were owned by timber companies until they were transferred to Maine Public Lands and then the real cutting and road building began. It looks like a war zone now. In my opinion, our public lands should be managed a lot better than they have been.

Carbon credits for long term sustainable forestry practices shouldn't be limited to large landowners. I think there are a lot of responsible small woodlot owners (up to a thousand acres) who would be interested in managing for the long term. This could help keep forestland in the family instead of being liquidated for development when the landowner dies. It's something that should be looked at.

Our forests are renewable, but it takes a long, long time to renew them properly. Thank you for the work you're doing, and for allowing me to submit comments. I own four hundred acres and would like to see this land protected and valued as forest lands forever.

5. **Joe Hardy** joealiceboth@yahoo.com

In general, I think the listed strategies are terrific, but I have one major concern.

My wife and I have about 170 acres in the Maine Tree Growth Program and have been in the Program for many years. It prioritizes the management of our acreage for timber harvesting. That has worked out for us until now, but my concerns about climate change lead me to want to minimize the harvesting and maximize the growth of our trees. I have read several recent research reports, passed along to me by an old friend, Dr. William Moomaw out of Tufts University, regarding tree age and maximum carbon sequestration. They suggest very strongly to me that I should delay harvesting to get the most sequestration possible.

Accordingly, I would like to retain the tax benefits of my acreage, but without the pressure to harvest. It seems to me that, at this point in our efforts to reduce global warming, sequestration is more important than lumber for the building industry, even though I do appreciate the importance of the latter. If your draft strategies are consistent with this thinking, then I am good with them.

6. **Greg Bridges** greg9662001@yahoo.com

While most land owners care about the climate we live in, I find it hard to comprehend that the state of Maine has added yet another layer of stopping development in the State of Maine. I live and work in a rural part of Maine that needs jobs. This Corona virus shut down has done nothing but show how little Augusta cares about the rest of the state. While the rest of us worry about how to make a living, you ask for input on yet another nonsense study on a Friday afternoon. This State needs to find departments that help projects develop real jobs in rural Maine. You are willing to give out of state interests a pass on granting the power line in Western Maine to transmit power from unnaturally flooded lands in Quebec to Massachusetts. Here is a project this state killed with the never-ending permit process with studies and permits.

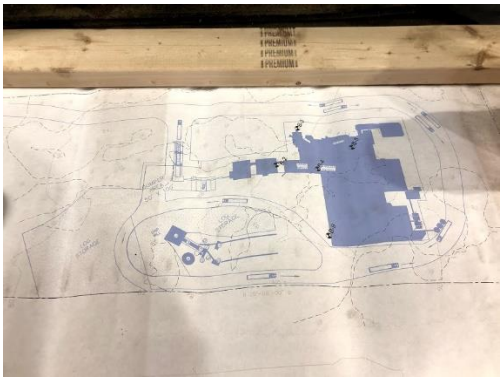
National firm proposes new wood fuel pellet mill in tiny Washington County community

This local company proposed to build a pellet mill in my back yard to supply wood pellets to Europe. This company was going to spend 60 million dollars on building the plant. It would have created at least 30 good paying jobs plus the jobs to cut the wood and support this mill. It would have finally used the tax payer funded conveyor system at the Eastport port to load bulk pellets onto ships to power coal mills in Europe. This market was created because of green energy credits to offset the use of non-renewable coal. The company spent well over $350,000.00 on permitting this plant. One of the most egregious studies was at the cost of $40-60,000.00 to do a wood fiber study to see if there was enough wood in Eastern Maine to supply this pellet mill. There is not enough market for most trees in Maine now because of the loss of so many mills. The last road block was that this project needed an air pollution study since it was situated next to the Moosehorn wildlife Refuge. The Refuge pays no taxes in the town I live in. The refuge occupies 85% of my town. We locals must subsidize property taxes to support the federal governments unfunded mandate to preserve land for migratory birds. This is yet another problem with policies to set aside nonpaying taxed land. Most of the engineering companies did not know how to comply with a study to satisfy a federal study with no guidelines on a plant that would emit very little pollution. This last study killed the project. This market opportunity was missed because of the long permitting period.

The wetland and mitigation fine, or whatever you want to call the cost to build on Maine's poorly drained soils, would have cost around $400,000.00 for this project. This is yet another punishment rural Maine suffers from because of unfair policies. This is not affordable to small businesses. The standards are not set out correctly for what real wetland is. While built up areas covered up wet land in large metropolitan areas years ago rural areas suffer because of massive manmade disruption in built up areas. There is so little man-made foot prints in my area it is ridiculous to punish us because of past excesses in wet land destruction.

As a farmer I believe that diversity is the only way to help things grow like our economy. I welcome the opportunity to show you the 90 miles of trees between Bangor and Calais. I can show you the starving businesses that depend on two months of tourist season with no light for opening because of Governor Mills one size fits all shut down. I am asking you to shut down your unneeded committee and give the money [to] the Maine Dept of Labor to help support real problems and people.

Greg Bridges Wild Blueberry Farmer



Blue print of pellet Mill in Baring Plantation, Maine

Google map image of 22 acres clear cut for purposed pellet mill in Baring Plantation, Maine

7. **Douglas Koritz** doug.koritz@gmail.com

My family has owned an island on Moosehead Lake for 50 years and have vacationed at Moosehead for 55 years. We have seen logging practices of Scott paper co., Plum Creek, and Weyerhaeuser over the years. Over this period all three companies withdrew more timber than could be replaced by natural growth, and hardly replanted at all. The result is that they now take out smaller softwood trees and more hardwood. Since these forests absorb CO2, this has impacted global warming. Weyerhaeuser is a clearcut company out west, and they seem to be doing the same around Moosehead lake. And we have seen no evidence of replanting. This is irresponsible land management even without considering its impact on global warming. There are several regulatory strategies that might reverse these bad practices. Furthermore, technological change in logging has reduced the employment in the industry in Maine. A small crew can lay waste to vast tracts of forest in ways that were impossible when we first started summering at Moosehead. I hope you can devise a feasible policy for improving the management of forest lands -- one that works.

8. **Steve Thiboutot** stevet412@gmail.com

Here's a suggested strategy

Focus on REAL problems like your governor bankrupting the state and the 20-30 percent unemployment she has caused because 35 people have the COVID virus.

Just a few FACTS about the climate for your information:

CO2 is a TRACE gas in our atmosphere and contributes virtually nothing to the warmth of the planet.

If it did Mars would be warmer than Earth as its atmosphere is nearly 100% CO2.

However, CO2 is a life-giving molecule necessary for ALL life on planet Earth. A small increase has resulted in a worldwide growth in vegetation.

Water is the biggest factor in planetary heat retention and is 100 times more prevalent in the atmosphere.

Ask yourself "if CO2 is so relevant, why did we have an Ice Age when CO2 was ten times its current levels"?

One would think that after 30 years of failed predictions by the so-called "scientists", people would finally see through this junk science.

You also ignore that NASA in 2015 changed historical temperature data to get rid of the warmest period of the last 100 years - the 1930s & 1940s.

They did that because they WANTED to show the last 20 years was the warmest. Attached is data taken from the NASA website (1999 vs 2016) that proves what they did.

Remember this fact:

"Fossil" fueled Capitalism did not make a naturally safe climate unnaturally dangerous but has instead made a naturally dangerous climate unnaturally safe.

You ignore science as well as ignore when you push this phony climate change agenda.

9. **Ernie Hilton** ehilton01@gmail.com

My wife and I have 800 or so acres of a typical old farm -a bunch of fields surrounded by woodlots.

Your 5th strategy calls for research into the use of wood products in various ways, especially in building materials. See 5c.

One element of this would be the ability to grow tall, straight timber. A factor militating against this is the huge number of deer in some parts of the state, especially around here. My woodcutter tells of mornings encountering over 100 deer. These deer pose the problem of browsing young trees, especially hardwoods and causing lasting damage in their economic value

As I understand it, landowners currently have recourse to have deer declared a nuisance. But of course, the White-Tail has become so heavily politicized in this state it can be difficult to get clear thinking on the subject. So, the process is exceedingly difficult, prejudiced against the landowner since involvement by wildlife biologists is involved, and is therefore underutilized.

What appears to be needed is some legislation which sets up rebuttable presumptions in favor of the landowners' position and requires IFW to rebut the landowners' concerns.

10. **Clarence & Jean Arno** carno707@gmail.com

Having read the proposal, I would caution that anything that hinders, impedes or discourages what is left of our farmers would be detrimental to Maine, our nation and the world. Allow and encourage our farmers to continue to work the land in sustainable, productive farming techniques as they have done for generations. Do not put more yokes on the necks of our farmers as they feed the world and sustain us all.

11. **Frank Thiboutot** fthiboutot@maine.rr.com

I am submitting the following comments to serve as my formal testimony adamantly against the efforts of the Maine Climate Council's "Natural and Working Lands Work Group".

The debate on climate change is simple. Let me first outline a few points:

No one I know wants dirty air, drinking water, rivers, oceans, land masses or anything else. That's called pollution which we CAN do something about.

Climate change is naturally occurring and cyclical caused primarily by forces of the sun and moon; it's not man-made. We CAN'T do anything about it. See Professor David Dilley's website:
https://www.globalweatheroscillations.com/david-dilley

Furthermore, climate change legislation is nothing more than an anti-capitalism, huge taxpayer money and power grab by Marxists and global elites. See:
https://www.discoverthenetworks.org/organizations/earth-day-network-edn/

I find your actions to be duplicitous while we focus on the pandemic leveled at our country and the world by the Chinese Communist Party, your group uses the crisis to provide cover for your attempted further takeover of Maine's economy.

12. **Frank Thiboutot** fthiboutot@maine.rr.com

"How dare you!"

The famous quote by Greta Thunberg can also be used by her opponents for trying to push the climate change hoax.

The Climate Committee is a fraud. See this video for the truth.

https://www.globalweatheroscillations.com/videos--lectures-and-presentations

"The issue is never the issue; the issue is always the [Marxist] revolution." -a famous 60's radical

13. **Jim Hummer** james.hummer@gmail.com

The draft strategy 4.d., encouraging the use of modern wood heat/power technology should be removed. The notion that burning wood would not release carbon dioxide to the atmosphere doesn't pass the straight-face test. I know that people will argue that by burning wood, you make room for new trees that suck that CO2 from the air, but that would be hard to demonstrate. We need to do all we can with our forests to sequester CO2, and not burn wood.

14. **Everett Worcester** everettworcester@aol.com

I think climate issues are real, but I also think that we have much more pressing issues in this state at this particular time and I question devoting lots of money and resources to this focus right now. We have a state essentially shut down, the economy in the tank, weird state policies concerning our economy and people in important positions who have never worked in or understand the private sector, which leads to terrible public policy decisions.

I also get the sense that the focus of this group is on state agencies exerting more control over private land owners. My wife and I own 257 acres or agricultural and forest land and we are not involved in any state programs

such as tree growth, open space or agricultural land. This is by choice. That does not mean that we are not concerned with the environment or climate issues. I doubt that we are the only land owners who don't trust "big government'" to know what's best for us or the environment. Your group might want to take this into account as you move forward.

15. **Meunier, Yvette** Yvette.Meunier@maine.gov [DACF staff]

- Creation/Reignite the Water Resource Management Committee and the Agricultural Water Management Board
- NRCS $ for planting cover crops,
- Sustainable Farming Recognition program,
- ARD marketing efforts for sustainable practices,
- Allowing farms to sell carbon credits,
- Plant more trees with assistance from Maine Conservation Corp.

[includes DACF-BAFRR 7/31/19 meeting notes and list of climate resources from other states]

16. **Fasano, Peter** Peter.C.Fasano@Maine.gov

Climate scientists say that simply allowing Earth's forests to grow undisturbed can go a long way towards mitigating climate change. So, with that in mind I'd like to see new ecological reserves created on public land. A Maine ecological reserve system was created about 20 years ago, but no new reserves have been added since. Not only do these reserves store carbon but they offer excellent recreation opportunities. A prime example is the Deboullie ecological reserve which I visited 2 years ago. In the northwest corner of that reserve it was astonishing to see Cedar trees 3 and 4 feet in diameter!

I also want to mention that I thought President Obama struck a good balance several years ago when he set aside 50% of the Alaskan National Petroleum reserve for oil exploration while the other 50% was designated as land to be left in its natural state. With that in mind, why not have 50% of Maine Public Reserve Land be open to timber harvesting and the other half be managed for ecological reserves or for carbon credits?

17. **Jennifer Curtis** jenncurtis1@yahoo.com

I read the NWLWG proposed strategies, and think they are by and large spot-on in their focus. I had a thought the group may want to consider:

Being the Town Planner of a fast-growing community near Portland, I see open land and farmland being eaten up in part due to lack of public sewer and public transportation in intended growth areas. I feel that State and Regional financial and planning support for public sewer and public transportation in developing suburbs right now could make a big difference down the road, reducing the pressure to develop farmland and other open land near Portland and other cities into large lot subdivisions for single family dwellings, and helping to concentrate development in the intended growth areas.

I hope that's helpful. The tie-in between public sewer and agricultural and natural working land could easily have been missed.

18. **Haskell, Shawn** Shawn.Haskell@maine.gov

support development of infrastructure for electric vehicles with solar-powered fill stations over existing impervious surfaces. Was looking into Tesla vehicles the other day, and they are coming out with a pickup truck. I would like to own one after the life of my current truck and have my own solar-powered fill station at home, which could be on the roof of my garage if it were not so expensive. I've only seen 2 electric vehicle fill

stations in my life: one near Calais and one in Burlington, VT. There are much larger buildings and parking lots out there that could support solar as well.

19. **Dwayne Shaw** dwayne@mainesalmonrivers.org

MDMR is a large land-owning agency. They should be added to the appropriate sections and they should accelerate acquisition of riparian buffers. Portions of these buffers should be maintained as Forever Wild - though some management for LWD to streams is appropriate.

I see no reference to placement of more land into Forever Wild. I believe there is plenty of research to show that older growth stands hold much more carbon per acre than managed forests.

There is too much emphasis on Working Forests. I see no reference to the state's Ecological Reserves. The ERs should be expanded solely from the viewpoint of carbon sequestration.

MIFW and the state own many dams without fish passage. Fish such as river herring can rapidly increase in abundance and are indigenous. These waterways need to be opened up immediately. Fish are composed of carbon. Their ocean derived nutrients also accelerate tree growth and the data supports this widely.

State BPL properties should not necessarily be largely set aside for logging. This should be seriously re-thought. Under Gov LePage, extensive logging and logging road networks were built, and aggressive cutting conducted. The long-term goal for our public lands may need to be carbon sequestration.
Slow down, reduce and potentially eliminate logging on state lands in order to keep more carbon locked in trees and soils.

Tree planting: Every square inch of state ownership should be examined to determine where we can plant more trees. This includes all of the lawns owned by the state in Augusta and elsewhere.

I understand the need to incentivize private landowners to keep land in forest. Comments above are largely focused on state owned lands / properties.

I want to also observe that the information I see in the draft looks like business as usual - largely. Easements, incentives, working landscapes. If we are looking to really move the needle around climate, I don't see it in the document.

I am aware of research that indicates the use of lime and perhaps silica can greatly increase vegetation and fungal growth in certain situations and - given the leaching of base cations from soils from acid rain, the practice would return the chemistry to the natural state. Projects like this are happening in Nova Scotia, Norway, Scotland and probably Sweden and Finland. The ecosystem recovers and the productivity increases thereby locking up more carbon.

Some farmers should be offered more lucrative incentives to re-wild their lands than they are offered to keep them in farm easements. This would be very attractive to many blueberry farmers in this region.

We need to think bigger and bolder if the purpose of the exercise is to be much more effective in addressing the climate issues. Business as usual is not going to secure a very healthy future for us and our children.

20. **Samantha Le, OD** samantha2020le@gmail.com

My first comment is for Draft Strategies page 11 d. “Reduce CO2 emissions...by encouraging the installation of...wood...technology.” I am concerned that cutting wood releases CO2, especially wood from primary

forests. I know wood is a renewable source, but a big tree sequesters a lot of CO2. Also, the burning of wood produces toxin. To encourage wood burning in the home means to subject children and the elderly to toxins.

My second comment is for page 11 e. "Increase climate education...through public school curricula...". This is an excellent idea. I have a middle schooler who attends Cohen Middle School in Bangor and she attended Mary Snow School. She has not received any meaningful education on the climate crisis. I make up for it by talking about it with her, but one parent talking with one child does little to mitigate climate change. I think the school districts must incorporate climate change education throughout Maine. How about creating programs where climate scientists from UMaine come to demonstrate and talk about their work with students? How about taking students on field trips to wetlands, forests, the ocean, etc? Maine has great natural beauty. Show it off and let the outdoors be your classroom.

I want to stay on the issue of school age children. The National Park Service has Every Kid in a Park for fourth graders. Maine should consider every kid in a state park for third graders.

21. **Wilhelm Merck** <wmerck@essextimber.com>

this forest carbon incentive aims at the large landowners so it would be complementary to the existing idea. In short, it is a pay-for-performance concept that I believe would be attractive to the big landowners and cost effective per ton of CO2e.
The text description is just over two pages and the attached spreadsheet accompanies the text.

Also, I have had some conversations with Wayne Walker, a remote sensing scientist at Woods Hole Research Center, about satellite measurement of Maine forest carbon. More to come on that, but the technology holds some interesting promise.

https://whrc.org/staff/wayne-walker/

Pay for Performance Concept 4/19/20

Maine's commercial and industrial landowners control a very large carbon sink but have thus far declined the opportunity to participate in carbon sequestration schemes. Their main objections have been the long-term commitment, management limitations and the extensive documentation, monitoring and verification protocols, all with insufficient compensation. One respondent in the Truesdale study said they would require $20/ton to overcome the obstacles of the carbon market.[1] That's too much money and it may take many years to deploy that system.

The potential of this carbon sink will not be realized until the landowners have simpler and more flexible incentives than anything we have seen thus far. This proposal meets those tests and sequesters carbon at a cost well below that of carbon markets. In essence, I propose that the state rent carbon, rather than buy it, from the large landowners. This program could quickly employ a very large carbon sink over the next thirty years, when we need it most, and leave Maine's timberlands healthier and more valuable.

The Plan.

Large landowners would elect to join a Pay for Performance program that would pay them if they meet a target quantity of carbon. Participants would submit a beginning inventory and supply annual harvest audits. (I am hopeful that satellite-based carbon measurement will soon make annual inventories cheap and accurate.) The landowners can operate any way they like, but they know that ending with an inventory above a certain very manageable target will pay-off.

The state would set a goal of adding 1 million tons of forest carbon per year above business-as-usual, making $1.50 per ton per year available, totaling a $4.5 million pot for the first three-year term. That money may come from RGGI, TCI, airline offset programs or elsewhere.

For the first three-year term the state would set a target of about 1.25% for all participants. A landowner with 1 million acres, beginning with 28 tons of above ground carbon per acre would have a target of 28.35 million tons after all harvests and mortality. At the end of the term, the participants who have met their targets are eligible for payment. The $4.5mm pool would be divided among the target-achievers on a per ton basis. If our landowner ended with 28.4 million tons, it would be paid for all of the increase of the period; 0.4 million tons. A maximum per ton payment would be stipulated. The accompanying spreadsheet tracks the math.

The target for the second term would be based on the tons of carbon on the ground at the end of the first term. If the second term target rate was another 1.25%, our landowner's new target would be 28.755 million tons. The landowner who wants to remain eligible for a second payment must continue to increase stocking levels. A landowner who takes the first carbon payment, then cuts the timber that it represents would not be able to meet the second target. He would effectively raise the second term payout for the participants who do maintain stocking and meet their targets. The smart landowner would manage for consistent carbon payments.

From the state's point of view, the carbon is cheap; relatively low payments are adequate for several reasons. First, the lack of detailed requirements make it easy for any landowner who wants to manage sustainably to make the target. After all, postponing harvests builds equity for the landowner (an advantage that most pro-climate interventions don't have) so less external incentive is required. Since we are deferring harvests, the cost to the landowner is no more than the cost of money – now at record lows. If a green ton of harvest in Maine sells for about $18, the financing cost to defer that revenue is $0.72 (at 4% financing cost). If half of the ton is carbon, it costs $1.44 per ton to keep it on the sequestration side and out of emissions. If that ton converts to 3.33 metric tonnes of CO2e, the cost is $0.43/mtCO2e. The math needs refining, but suffice to say, it is a very cheap way to sequester carbon at scale.

The spreadsheet illustrates how this might look over the first three three-year terms. The program would have to run for a minimum of 30 years. (On the spreadsheet the landowner's acres and C/acre are made up, but the aggregates are about right.)

In the first term of this scenario:

- Seven out of ten landowners exceeded their targets.
- Those who exceeded the target were paid more than the cost of deferred revenue.
- The state grew over 1 million extra tons of carbon each year at a cost of $1.35/ton.

In the second term:

- The same landowners exceeded their targets at the same rates, except #1 and #5, who chose to harvest the tons that had been paid for in the first term. Those landowners could not meet their second term targets, and significantly subsidized the competitors who did.
- Those who exceeded their targets were paid well over the cost of deferred revenue. This suggests that a payment cap of about $2.00/ton is advisable.
- The state grew 0.164 million extra tons of carbon each year at a cost of $9.16/ton without a payment cap, or $6.61/ton with a $2.00 cap.

In the third term:

- All the landowners saw the bonanza realized by those who met the targets of the previous terms, so all of them met their targets by a small margin, which is optimal for them.

- All landowners were paid more than the cost of deferred revenue.

- The state grew over 1 million extra tons of carbon each year at a cost of $1.40/ton.

A major benefit to the participant is the freedom to harvest for any financial or silvicultural reason. There are no claw backs, only opportunity cost. The risk to the participant is bearing the cost of postponed revenue, but then falling short of the target. That is a manageable risk. For any landowner who plans to manage for sustained yields there is no reason not to join the program and hit the target every time. But there is also incentive to harvest because the carbon payments are limited; if too many players grow too much carbon, the cost of deferred revenue exceeds the carbon payment.

The landowners are not locked into anything; those who are best able to produce carbon will be compensated for it, and if wood markets are strong, they are free to harvest instead.

The state only pays for the carbon when it has been produced, at a not-to-exceed price, and with retrospective payment, the carbon's existence can be measured with certainty. The landowner takes the risk of natural hazards, as is true with all other forest products.

This plan focuses on the commercial and industrial lands for reasons of scale economies and verification costs. It is also likely that the large landownerships have the best carbon uptake efficiency. Leakage may occur by shifting some demand to smaller landowners with higher stocking levels, but that shift is not without benefit. Leakage across borders may also occur, but only until other states and provinces create forest carbon schemes of their own. Quebec has one in development (which also will eliminate the 100-year commitment).

Additionality is assured in this plan, but permanence is not, which is a benefit. If the quest for permanence, with its many restrictions, has prevented the utilization of the industrial forest carbon sink, we are better off without it. Instead of permanence, this plan builds forest carbon, starting now, at a low cost, for as long as the dollars are available. It is likely that money for cost-effective GHG mechanisms will become more plentiful in coming years. Meanwhile, carbon payments will support a transition to longer rotations, with long term financial benefits for the landowners and the forest products industry, and with climate and environmental benefits for all.

1. Sustainable Forestry Initiative Certification and Carbon Markets – _Opportunities and Barriers for SFI Program Participants in Maine by Alison Truesdale, Keeping Maine's Forests, June 2017

22. **George Fogg** gafogg@myfairpoint.net

I am an old man of just shy of 2 months of being 88 years old and feel I should comment on these climate ideas by government. Since I was born on a poor dirt farm here in Maine and watched my family scratch its existence from the rocky soil, I feel somewhat qualified to comment.

For one I feel it is arrogant of man to think that he is so important that he has changed the climate. I believe that much greater forces have had this effect. Whether it is sun activity or other universe changes I think it is the height of man's conceit to think that he is the cause of these climate changes.

As one can readily see in the current Virus upheaval nearly one half of our population thinks opposite to the other half. As noted in the shelter in place edict by government a large number is chafing at the bit to either ignore or violate the rules supposedly for their benefit.

Do I think that man can make rules that will drastically help change our climate? No! Do I think that government is a terrible waste of taxpayers money? In many instances, yes! Do I think that we need to spend

billions trying to get mankind to change its ways to lessen the greenhouse gases, no!
Do I think mankind is responsible for the current changes, partially, but we need to very carefully weigh the factors before we spend my hard earned money on ways to change the climate when there is a God who has much greater control.

23. **Greg D'Augustine** greg.daugustine@gmail.com

After reviewing the document provided, I find myself wondering at the lack of commentary about fresh water systems in the state. It seems likely that climate change challenges will include maintaining or improving the health of our fresh water fish and invertebrates.

24. **Darren Ranco** darren.ranco@maine.edu

First, the document is nicely framed and easy to understand.

As you might guess, given my work and research interest, I would have liked to see the Tribal Nations in Maine mentioned and identified as partners. They are currently working on research and adaptation planning, and we are involved in some of it in Native American Programs. I am happy to make specific suggestions of where, but I would say wherever communities and/or governments are identified in the document, it would be a place to do this. I noticed there was no Tribal representation on the committee, and perhaps this is why they are absent from the document, and maybe this is intentional—if that is the case, I would gladly think that through with you as well.

Darren J. Ranco PhD
Chair of Native American Programs
Associate Professor of Anthropology
Coordinator of Native American Research
University of Maine

25. **Cindy Lang** cindy78lang@gmail.com

Thank you for asking for feedback. "Everyone" has opinions. I believe it is an excellent way to engage/involve people as "everyone" wants to be recognized. You all and your peers are already doing fabulous work. I can't imagine reading through the feedback from people like me who "shooting from the hip".... and I include every good wish to each of you.

My feedback (dreaming and realizing that billions of dollars are needed for implementation and follow through and follow us. And I wish I had the magic and the crystal ball to find the funding, but I don't. Prioritizing is key for Federal and State money but that is probably too political. There are many States with successful programs for these issues. I have no idea how people make choices as to whether their lifestyle and activities are ethical in relation to this one earth and the life it provides us. Every single choice has a consequence.

Create a government program for all the UNEMPLOYED....put them to work/educate them on how to protect our natural resources.... growing food...and killing/removing the invasive plants/species

we cannot have wildlife or food for animals (humans) without straight species native plants/caterpillars/birds/pollinators.....put people to work ridding the State of invasive plants/species... http://www.volunteermaine.org/

Mandate that all streetlights and all outdoor lights on all public properties and private properties to be energy efficient and yellow and all on motion sensors. (Light pollution kills insects and birds)

1. Will the University of Maine please STOP suggesting/using the use of pesticides?! ...Please Maine must ban pesticides/insecticide/herbicides/fertilizers/chemicals...This is a MUST for all of the reasons each of us knows. "We" cannot have U Maine as leadership when throughout their websites and promotions and communications the word PEST is predominant, and chemicals are suggested.

2. Plastics must also be banned. There is basically no such thing as recycling. https://www.terracycle.com/en-US/

3. Invasive plants and nonnative plants and straight species native plants education and ethics and the landscaping industry. Sourcing native plants from the Midwest, for example, and bringing them to Maine and then labeling them at Native...?! This is not helpful! Maybe it is finally time to get past the milkweed/monarch branding mantra and educate about the keystone plants. The University of Maine and the Maine Department of Education and Maine Agriculture and the RSD School Districts..and the private schools.and all of the Libraries ..could bring to the forefront the crucial need for Science/ Earth Sciences/ Biodiversity education. Through these institutions which are located in every community, there could be community gardens in every Town. http://www.volunteermaine.org/

non-profit groups + individuals + wholesalers, retailers, corporate growers, lawn mowing, foresters, all of the hundreds/thousands of Arborists, and importantly Maine DOT. The Maine DOT has all the tools it needs but needs to implement this Statewide and ongoing:
https://www.maine.gov/mdot/publications/docs/guides/MaineNativePlantsForRoadsideRestortation.pdf

4. CLEAN ENERGY....electric cars + electric outlets for cars + electric public transportation large & small...vans/taxi cabs etc +

Thank you for all of your expertise, professionalism, and dedication to our one earth.

https://earthshotprize.org/ https://wildseedproject.net/ http://bringingnaturehome.net/

26. **Lindy Moceus** lindy@fairpoint.net

I will start by saying I am not very optimistic about our future (due to climate change) and for that reason, look at the proposed strategies as too little, too late. Understandably, asking for a lot (or what we really need) would come across as too extreme because it would require people to make extreme changes which is contrary to human nature. But things are already getting dire. The proposed strategies may have worked a couple of decades ago.... but in light of 415+ppm atmospheric CO2 level we have to do more, faster.

Here is an example of some changes I would make to one of your paragraphs:

Draft Strategies

2.a. Establish a stakeholder process to develop a voluntary and incentive-based Maine forest carbon program for woodland owners of 10-5,000 acres, to increase carbon storage. and encourage forest management while maintaining current timber harvest levels.

Reasons for the above deletions:

--why involve stakeholders to weigh in....just have the State offer an incentive program to encourage landowners to adopt land practices to store carbon.

--the key to fixing climate change is to remove carbon from the air and then put it somewhere where it stays out of the air. Maine's extensive forests are something most other States don't have. Our forests can provide a natural way to fight climate change in that as trees grow, atmospheric carbon gets stored in their wood. Harvesting the trees, however, cancels that out unless the wood in used only for purposes where the carbon continues to stay stored. i.e....materials for building houses and other structures, furniture, and other long

lasting non-expendable purposes. Using the tree as biomass for example, should NOT be allowed here as it puts the carbon back into the air! In fact, one area that Maine should look at to fight climate change is to phase out Maine's biomass industries. Pulp for papermaking isn't great for climate change either, but we've got to have paper. Perhaps more emphasis could be put on more paper recycling so fewer trees go for that. Of course, there would be a lot of opposition to all this.... but when are we going to start doing what is necessary to save the planet?

I hope that from the above you get a sense of what my concerns are and that you will consider some stronger requirements throughout your document

27. **Pamela Cowles** pjc1971@gmail.com

NO, NO,NO to the initiatives put forth, this is not the direction that's best for Maine people. These initiatives will further cripple Maine's economy and crush the spirit of the hard-working Maine people. In light of the current disaster effecting our state, such initiatives are a slap in the face to every Mainers struggling to survive. These initiatives take away any incentive for Mainers to stay. I expect these initiatives will be the straw that breaks the camel's back for far too many Mainers, this achieving the Governor's carbon reducing goals because many people will find homes elsewhere.

28. **Kelley McAlpine** jackmac_4@yahoo.com

This group and its proposed policies and goals is ridiculous and not needed. Do you people actually live here? Have you driven throughout the state? If you had, you would know that requiring people to drive less is not feasible. Our state is huge, and towns are far apart and public transportation won't work outside of a city. It would also infringe on our freedom of movement. You claim to want to encourage diversity and inclusion 1. What does that have to do with climate change? 2. Maine is one of the most welcoming states in the country. It's too bad we are one of the highest taxed ones and people can't afford to live here. 3. Rural living is not everyone's cup of tea. Most people like it for vacation but not daily life. Unfortunately, with the Governors handling of covid-19 we won't have a tourist season this year. Which is good news for your group. There will be less emissions. And businesses are closing left and right so that means less energy use, fewer people traveling to work etc. Claim 2 is you want to prioritize the welfare of Maine's citizens. If that's true, then leave people's way of life alone. This is how we feed our families and provide daily necessities. Start putting restrictions on livelihoods that people can't afford to meet, and people lose jobs and money. Families suffer. Why doesn't the state work on helping the homeless and low-income people. They are the ones whose welfare you should be concerned about and I'm sure that for those people your policies make no difference when they are worried about where they will sleep or where their next meal is coming from. Claim 3 is to improve the resilience of Maine's communities, people and industries... none of those are being negatively impacted by climate change. Not once has business not been able to open because of the climate. What does keep them from opening is government policies and restrictions. Please leave Maine and her people alone!

29. **Barbara Vickery** barbaravickery@roadrunner.com

Overall, I think these are excellent.

My comments are in some parts about language that seems to me unclear, and in only a very few cases of possible strategies that seem missing.

Overarching suggestion: I think it would help citizen reviewers to have SOME clue what the assumed issues and benefits of different strategies are, e.g. a lot of carbon is sequestered in soil so keeping soils undisturbed will keep the carbon there.

And some strategies are about mitigation (reducing the amount of emissions of greenhouse gases) while others are about mitigating the impacts from climate change, like big rain events impacts on forest streams. Maybe even a symbol next to each strategy?

Scope of work

What does “different levels of forest landownership" mean? Might there be a clearer way to say that?

The Agriculture section seems weak- explore is not a very assertive verb and "explore potential" makes it sound like we don’t know any ways to reduce emissions thorough existing programs. Is that true?

Strategy 1- Great

Strategy 2- 2. b.iv says incentivize farmland management practices with climate mitigation and adaptation benefits” That is good and it implies we know what those are. If so, maybe the language under Scope of work could be strengthened. I imagine there are SOME that are known, and other management practices where the benefits are not yet certain and need further research. But let's incentivize the known ones and explore potential of the unknown ones.

Reduce tillage? Manage manure differently- capture methane? Feed cows different foods?

Water storage and irrigation systems that prevent damage from too much rain and saves it and uses it efficiently for times when there is not enough.

Strategy 3 - I would think for NRCS water management would be a high priority- see my last comment

Strategy 4 a, b, c are excellent. d. re encouraging use of wood-based energy makes me a little nervous. I would replace or add “high efficiency" to modify the technology and wonder if there should be further caveats about making sure it really is a net carbon benefit.

Strategy 5. a. ii. The word “surveillance" seems odd here and might be alarming to some. What is really meant?

The research strategies are good. Given the questions around what practices will really make a difference in the amount of emissions from either forestry and agriculture research is essential.

I wonder about adding a bullet having to do with monitoring status and progress in future? Whether amount of natural land, acres conserved, carbon sequestered, or and of course this is harder, the amount of carbon being emitted??

Things I found “missing”

Peat mining? - Maybe this idea has gone away, and we don’t have to worry about it, but it would be a really bad idea to do!

Sequestering carbon in saltmarshes. They are potentially a huge sink of carbon in Maine and at risk from SLR and extra rain and especially from human alterations to drainage and ability to migrate inland. Should they be mentioned under Natural and Working Lands? If not here, where?

Forest fires. If we get drier summers, I would think wildfires would become more common. It is important to keep and maybe strengthen our mechanisms for fighting forest fires and paying for that effort. We are not at risk the way California is, thank goodness, but we can still learn some lessons from their experience and that of the USFS whose funds to do all other important conservation work have been so diverted by fire management costs.

30. **Si & Lila Balch** balch77@gmail.com

1) Which strategies seem particularly promising to you?.

a) Developing a tax on CO2 fuels to fund this. Dealers can efficiently pass costs on to users.

b) Expansion of the "current use tax" concept to support CO2 sequestration. A portion of this must better compensation to towns for their lost tax revenues.

2) What is missing?.

a) More emphasis on building with wood.

3) Do any of these strategies concern you, and if so, why?

a) See comments of permanent CE's

b) Lots of emphasis on public lands that are not really a problem in this CO2 dilemma. It is politically correct and easy but particularly effective.

c) Private lands are the key, and non-industrial lands in particular. Other states are working the same issues. Collaborate with them to develop common systems that work. In the past every state has developed its own current use programs, because they think they are different and smarter than other states. In New England, New Hampshire has the best forest current use program, with a 3 tiered tax reduction approach. Something similar could be developed here, to deal with CO2 sequestration.

d) Any program has to value the sequestration of CO2 in three locations, living forests, solid wood products and land filled carbon-based products.

1. Strategy 1: **I agree there needs to be funding for numerous projects. Funding any fund is key. I am very concerned about sources of money and their political likelihood of enactment. If the fund is to lower CO2, then the most logical source of funds is from CO2 producers. We are all CO2 producers. Petroleum dealers are a fairly efficient foci of funding and they can pass on their costs to their customers.**

    a. **Acquisition is OK. CE's are popular but have some serious flaws. I have worked with CE's and nonprofits who hold them. They are costly to monitor and offer the CE holders no income source. Another problem is the concept of permanence. Again, it seems easy and the federal tax credits require it, BUT we cannot predict our needs in the distant future and locking up large amounts of land for particular uses forever is not good idea. Some publicly owned land like Baxter Park is fine, but using CE's for private land in perpetuity is not wise. I prefer term easements of 50 or more years. At the end of that time, the situation can be revisited.**
    b. **OK**
    c. **OK, see my comments at 1. Above.**

2. Strategy 2: **Yes, I agree there needs to be funding for numerous projects. Funding any fund is key. I am very concerned about sources of money and their political likelihood of enactment. If the fund is to lower CO2, then the most logical source of funds is from CO2 producers. We are all CO2 producers. Petroleum dealers are a fairly efficient foci of funding and they can pass on their costs to their customers.**

There can be some additional work done to pay landowners to sequester carbon. It is very important to recognize the monetary value of sequestered carbon.

A very key point is that any land tax reduction effects the town where that occurs. Towns must balance their budgets, so every tax reduction for one owner results in a tax increase for everyone else. Originally current use tax programs were sold by saying that the state would reimburse towns. It has never been fully funded. What is more, the reimbursement amount is based on county wide average tax rate. Towns with

higher value properties, especially shore land, suffer large losses and have to raise taxes substantially on other land owners to balance the books. This situation must be addressed in any new work.

a. Innovative forest land tax system. This would be complicated and hard to implement. Voluntary with little mandatory reporting beyond current reporting under MFS FON and the TGTL. Would require periodic (10 yr) average stocking BA by HW, SW & MW and certification by a licensed forester.
    i. Basically it would reward forestland owners who did not convert land out of forests, stayed in the program long term and provided some periodic basic forest and harvest info. Similar to the TGTL, but without the penalty for land withdrawal.
    ii. Tax reduction would be small on a per acre basis and it would increase the longer the land stayed in the program.
    iii. Funded by additional tax on CO2 sources
    iv. IMPORTANT – **The towns must be fully reimbursed for reduced taxes.**

Strategy 3: **OK –**

a. Not a real priority because the things to be done are not hard or spectacular. See the Manomet Climate Smart for actions that can be done.
b. Same issues as a.
c. **Same**

3. Strategy 4: **Public land is easy and not at risk of either loosing carbon or really gaining carbon. Low impact suggestions, politically correct.**

4. Strategy 5: **OK – learn from others and do not reinvent wheels.**

31. **David Kuchta** dkuchta@mainerr.com

Thank you for developing the Draft Strategies that will be recommended to the Maine Climate Council. As a co-owner of a community solar farm (CSF) installed on marginally productive farmland in Saco, I support the use of farmland for the production of solar energy, as it diversifies farm income and therefore reduces the threat of farmland being sold for other types of development. Our CSF succeeds in fulfilling the goal of Draft Strategy 4(c)(ii): the need to balancing renewable energy development with no net loss of prime agricultural land.

I encourage the Natural and Working Lands Working Group to develop renewable energy siting guidelines for farms that can implement Draft Strategy 4(c)(ii), and encourage the Working Group to recommend incentive programs to promote adherence to those guidelines.

As the Maine Farmland Trust's *Strategic Plan 2020-2025* suggests, "On site energy production can support farm viability and reduce energy costs, but we also want to ensure that solar development in the state does not result in the loss of important soils or impede farmers' ability to access the land they need now and in the future."

Too often, economic pressures result in poor siting of renewable energy production on agricultural land. According to the American Farmland Trust's *Farms Under Threat: A New England Perspective* (March 2020), in areas where solar companies offer landowners $5,000 to $10,000 per acre, solar farms drive can drive up land values, limiting the ability of farmers, especially beginning farmers, to access land. Financial incentives to promote adherence to best siting practices will reduce economic pressures that lead to poor siting of renewable energy systems on farmland.

Incentives for following siting guidelines can help balance the need to preserve farmland with the opportunity for farmers to diversify their income. For example, the Solar Massachusetts Renewable Target (SMART)

Program incentivizes qualifying dual-use solar PV systems which combine agricultural production with electricity production. Dual-use systems allow for the growing of crops alongside or underneath PV panels. (See https://www.mass.gov/files/documents/2018/04/26/Agricultural%20Solar%20Tariff%20Generation%20Unit%20Guideline%20042518.pdf.)

The CSF that I am a member of has its PV system sited on farmland whose lack of easy access made it not financially viable to farm. The *Best Practices for Low Impact Solar Siting, Design, and Maintenance* document authored by a number of Maine-based organizations offers other alternatives, such as siting on degraded or disturbed land. Renewable energy can indeed be developed with no net loss of prime agricultural land. I encourage the Natural and Working Lands Working Group to take further steps to make this possible.

32. **Larry Totten** alloutdoors.lt@gmail.com

Utilizing wood to generate energy should be clarified to state that only waste wood should be used and that is at best. That is wood that will rot and give off carbon dioxide and methane. Usable wood product such as building material stores carbon indefinitely. Burning wood gives off six times more carbon dioxide than natural gas and wood will take about 125 years to regenerate as mature timber. The earth can't wait that long.

Renewable energy should not be used to describe wood energy. Renewable is carbon neutral or better such as solar, hydro, wind, or nuclear. Trees sequester carbon that is already in the atmosphere. A thousand board feet of spruce sequesters 4 tons of carbon dioxide.

33. **Juli Lacey-Black** juli@laceykennels.com

In a state that is 61.3% rural, for the urban area (38.7% per Wikipedia) to make climate change a priority when it affects mostly the urban areas is elitist in the extreme. It affects me therefore it affects you. All this based on questionable science to begin with. To take tax payer money and send it to the UN is even more offensive. If the urban areas wish to enact new tax law and new "climate friendly" resolutions and/or laws for themselves by all means, please do. But leave the rest of the state ALONE and be sure to have those new laws/resolutions/taxes be effective only where the urban areas are. We in the rural areas have a fragile enough economy without your "help"

34. **Triandafillou, Peter** p.triandafillou@huber.com

Overall, I think you might add stronger language on the need for robust economic growth and activity. That activity will produce revenue to help pay for climate change mitigation and adaptation.

Strategy 1 – We already have funding sources for conservation. The goal should be to use available funds for the best projects. We should direct our efforts at the places most at risk – forestland in central and southern Maine, and farmland. The vast majority of Maine's northern forests have relatively low conversion risk. On the other hand, forestland near populated areas has considerable development value. I suggest we focus Forest Legacy funds where development forces are the strongest.

Paragraph a. – easements are preferable to fee acquisition.

Strategy 2 – Section a. This idea will be relatively expensive, difficult to manage, and produce little benefit.

Section b. Rather than tinker with Open Space, I would increase funding for the Maine Forest Service to actively promote forest management to the owners of family woodlots. MFS already does a good job at this, but increased funding/people would be helpful. Many family woodlots see little, if any management. I strongly advise you to avoid suggesting changes to Open Space or Tree Growth (I am glad changes to TG are not contemplated in the document). Changes are always controversial, and frankly unfair to landowners who make a long-term commitment, and who expect policy stability in those programs.

2d – I practice forestry in other parts of the country, and I can confidently state that Maine's logging force is both progressive and already has high quality on-the-ground performance. I would let the market determine the best equipment mix.

Strategy 3 – paragraph a. is on the right track, but the language should focus on education on active forest management. Climate goals will naturally follow.

Strategy 4 – paragraph a.ii Public lands has few options to manage ecological reserves, and many of the existing reserves will eventually see considerable mortality and age class turnover. While this is an interesting and important ecological process, it can be counterproductive in terms of storing carbon. Public lands has many more tools available for carbon on its managed lands. I see no good connection between ecological reserves and carbon management.

c.ii – a 'no net loss' policy can have unintended economic consequences. Maine needs economic development, and that requires some land conversion for commerce and housing. There's no point creating unattainable or unnecessarily difficult goals.

Paragraph e – Our public school system is already stressed by competing standards and requirements. I see little value in venturing into public education.

Strategy 5 – paragraph a – it seems to me that the federal government already spends many millions every year on climate research. I think Maine can use its limited resources elsewhere.

Paragraph b. As the state's sole public research institution, U Maine is already the coordinating hub for applied and basic research of all kinds. We should by all means continue to support and nurture U Maine, and make sure it maintains its excellence in the list of research fields.

35. **Vince McNally** vamc@verizon.net

1) Encouraging Maine to be a hub for CLT is promising as it would create much needed jobs in a sector we already have infrastructure for

2) Getting State Park lands involved with limited logging to make them more resilient in light of EAB, gypsy moth, spruce budworm, etc. is missing from the State's action plan

36. **Susie O'Keeffe** sokeeffe@coa.edu

In reviewing this draft, I see much business as usual thinking. If we are to tackle what is coming our way, we must restore and rewild the Maine woods, maintain what exists, especially the older trees, as they sequester significantly more carbon. We must also plant as many complex, native ecosystems as possible. We must quickly move away from industry driven thinking, and toward rewilding, and restorative systems that are based in ecosystems thinking rather than species by species harvesting. The newest science concerning micro rhizome networks, carbon sequestration, as well as extinction due to the devastation of habitat and habitat connectivity. Addressing the undocumented waste in the lumber industry, and mitigating that waste, is also essential. Each tree is a gift, and we must begin to teach ourselves this truth, and integrate it into our everyday work with the forests.

I hope you will participate in this upcoming Zoom that is being sponsored by Mid-Coast Conservancy. Professor Moomaw should be consulted, as should the Northeast Wilderness Trust for appropriate restoration and rewilding of Maine's devastated forests. Carbon credits are real and actual incentives that can be offered to private owners. See Blue Source

http://www.bluesource.com/market-makers/environmental-markets/carbon-offset-purchases-sales/

37. **Huot Michel** huotmichel201055@gmail.com

I have received a recent invitation to comment on a list of draft strategies developed by the Maine Climate Council. I have highlighted some parts of the document in yellow as I found these statements very good ones.

I am returning the pdf with my comments included. My background is in silviculture. I previously met some people from the University of Maine (Brin Roth) or the US Forest Service (Laura Kenefic, Robert Frank, John Brissette). I am now retired from the Ministry of Forests, Wildlife and Parks (Quebec). I worked in Fredericton in the past (1982 to 1988) , on spruce budworm consequences. I know Dave Strubble from Maine.

I know there are some current efforts in the Centre-du-Québec region to develop a silvicultural guide in order to cope with the need to develop more resistant and resilient forests.

[additional comments in PDF copy of NWL solicitation of public comment]

38. **Fred Morton** fmorton44@roadrunner.com

Sounds like a lot of ground was covered, and many of these suggestions will help the state meet the carbon goals. I don't have much to offer in terms of the content but will share my biggest concern, cost. A number of the strategies, such as infrastructure improvements, staff increases, carbon purchase will need to be funded. It currently appears that the Covid 19 economic impact on Maine will result in a current budget deficit well in excess of $1 billion, and the economic impacts will be felt well into the next several years. The Covid 19 crisis should not derail the climate efforts, but from a realistic standpoint the implementation of these strategies may well get pushed out further than was anticipated and longer than some may like. More commentary than anything else, but economic realities need to be in the equation as well.

39. **Robert Perschel** New England Forestry Foundation rperschel@newenglandforestry.org

We are persuaded that Maine has an outstanding opportunity to contribute to the global effort to mitigate climate change.

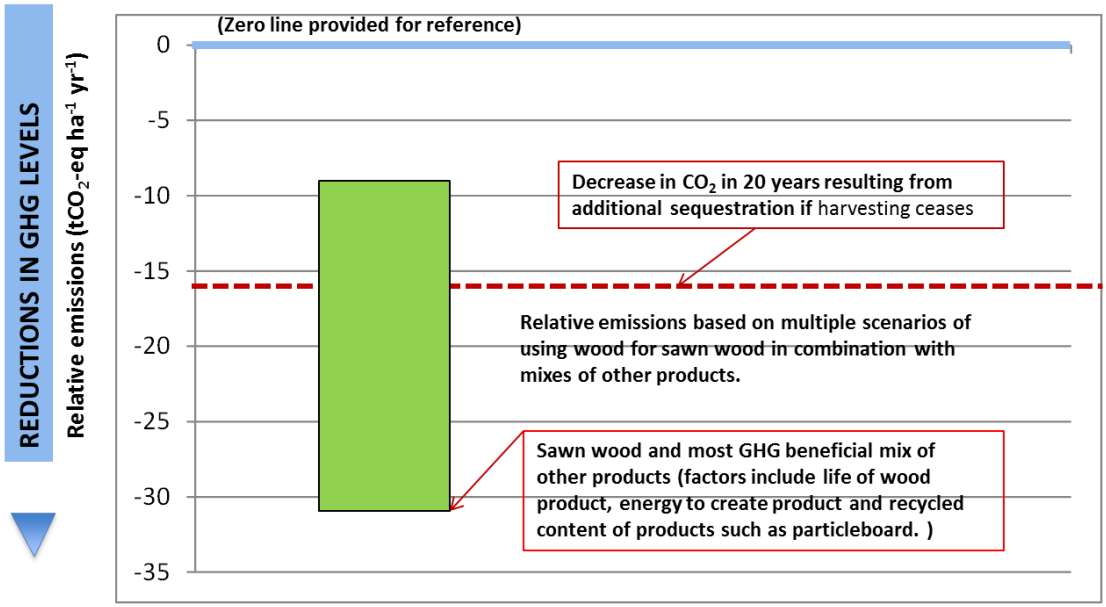
This is largely as a result of Maine's forests, its forest landowners and its forest products industry.

Maine's forest products industry is positioned to become a global leader in a broad movement to substitute wood for other more energy intensive construction materials. The attached graphic illuminates this opportunity. Research by Chad Oliver at Yale concludes that simply using wood to replace other construction materials could reduce global greenhouse gas emissions by 14 to 31% - clearly a very significant contribution to reducing the impacts of climate change. We believe Maine is well-positioned to capitalize on this potential and meet not only its own emission reduction goals but also those of southern New England and beyond. The opportunities include not only traditional wood products but also advanced wood products such as cross laminated timber and nano cellulose. Maine is already a leader both in producing traditional products and innovating to create new ones. Let's build on that trajectory. It is evident that this could be a significant boost to Maine's economy.

Maine's greatest biological resource, its forests, have similarly globally significant opportunities to mitigate climate change by storing more carbon in its forests, while they continue to be managed and support the forest products industry. They do this by effectively "pumping" excess carbon out of the atmosphere and making it available for the products outlined above. Our work has led us to conclude that in some areas forest carbon stocks could be increased by up to 30 metric tons CO2e per acre over the next 25 years. Further, we believe that this could be done while maintaining the timber productivity of our forests and hence the supply of raw material for the industry. In addition, because other areas of the country, including but not limited to southern New England, and other industries, including but not limited to the airlines and the oil industry, are looking to offset their emissions, Maine could have the enviable opportunity to attract others to pay for increasing the carbon stocking in Maine's forests. In short, Maine has the forests which can produce these benefits and others have the need.

In earlier correspondence we have made specific suggestions in relation to the two pathways highlighted above, e.g., expanding efforts to store carbon in Maine forests from just small landowners to all Maine landowners and highlighting the importance of substituting wood for other construction materials to reduce GHG emissions. In alignment with the Governor's encouragement to think big we urge you to envision ways Maine could actually become carbon negative and sequester more carbon than it emits thus creating the possibilities of selling carbon credits to other states and supporting Maine's economy and the health of its forests.

Attached below:



40. **jake mccamic** jakemccam@hotmail.com

An acre of grass sequesters more carbon than an acre of trees
Utilization of clear cut or heavily logged woods would be good place to graze cattle.
Grant money for fencing, seeding and brush/stump removal would be well used in establishing pastures in otherwise vacant land.
Farmers who have tillable and wooded lots could save their tillable for crops.
Making sequestering carbon profitable is key. On a rotational grazing system there is a net drop in greenhouse gasses that remain in the atmosphere all the while fertilizing the ground and protecting water ways making food for people and money for farmers and towns and counties and states.
Jake
Farm owner in cyr plantation

41. **Paul Dest** dest@wellsnerr.org

I read through the NWL Group's draft strategies and have nothing to add or comment on, other than great work!

42. **Jim RobbinsSR** Jimsret@rlco.com

1a. Increase permanent protection of forest land and farm land: comment- protected forest lands should always be protected as working forests. As the world's population continues to increase there will be more demand for wood products and we will need working forests to provide those products.
2a. comment- The best way to store carbon is by making building products from wood and then building houses and other structures with it. Meanwhile, where the trees were harvested are now growing new trees and storing more carbon. I don't believe it will be feasible to do carbon storage programs on small acreages (less than 200 acres), as administrative and monitoring costs will be too cost prohibitive.
2c. Comment- Renewable Energy- Encourage biomass power plants and more biomass harvesting. This reduces the burning of fossil fuels, employs many people in rural areas and is the best silvicultural tool we have to get rid of low-quality trees, thinnings, slash and sawmill residues. Many small biomass power plants co-located with other companies needing steam would mean the fuel wouldn't have to be transported very far and would benefit the local economies and forests.
3a. comment: very important. We need to have more state service foresters to educate small landowners, especially in southern Maine, that it is beneficial to wildlife, landowners, mills and our society's economy to harvest wood- but it must be done responsibly. Private forestry consultants should actually do the land management and supervise harvesting for small landowners.
4d. comment: Very important. The state needs to play a big role in educating the public about the benefits of heating with wood.
5c. comment: Very, very important to have the Governor issue an executive order to mandate that wood materials, like lumber and CLT, be given serious consideration on all new State of Maine construction projects. The state should also be doing all it can to encourage manufacturers of MDF and CLT to locate manufacturing plants here in Maine.

43**. Nicholas Fisichelli** nfisichelli@schoodicinstitute.org

Thanks to all who are working on the Maine Climate Council. This is critical and timely work and will require coordinated efforts and innovative public-private partnerships. I have three general comments and assume these are both being discussed and addressed, so these comments are probably an affirmation of the ongoing work:
1. Translation of science to management and co-production of management-relevant science are critical to the response to climate change. Funding is needed to facilitate this process and the organizations and people leading this work.
2. In order for there to be success here in Maine, a broad coalition of organizations (state, federal, non-profit, and business) is needed to respond to climate change. The strategies put forth in the document I quickly reviewed (Natural and Working Lands) have a heavy emphasis on state offices and universities. I am the head of a non-profit organization focused on the response to environmental changes including climate change, and thus see the need for inclusion of a broader set of organizations.
3. Climate change in ongoing and the coming decades will see continuing change, thus guidance must also support adjusting to the changes and facilitating changes to foster a desired future that will necessarily look different from the past. The push for "resilience" is often interpreted as keeping things the same, but in many cases, this will not be viable, and failures will be costly. Clear and honest language and dialogue are needed to make the difficult decisions needed to adapt to changing conditions. It is the role of this council to help raise awareness of the ongoing changes and how the future may look different from the past. E.g., managing for a specific tree species or fishery that is declining due to warming may not be a viable long-term strategy but shifting management emphasis to another resource adapted to emerging conditions may have greater benefits - many may not see this at first as a "resilience" strategy. Clear communication is needed.

44. **Jaime Haskins** jaimusturhaski@gmail.com

I am currently interested in the proliferation of invasive plants, nationally and locally, and the implications of this in concert with climate change. I believe the best we can do relates to prevention of invasives through

regulation, in the nursery trade, for example, and education of landowners, including small landowners in towns. Controlling invasives, once the cat is out of the bag, is much more questionable and vastly more expensive. The "science of invasion" is something that needs to be studied in detail from many angles and globally. I think it is also worthwhile to think outside the box on the long-term processes involved with invasiveness. The forces of nature are great, and we humans are contained within those, even though we are possibly the most impactful keystone species the planet has ever seen. But we are more a tool of nature than nature is for us. So, the question ends up being "if we have a choice in the matter, what kind of tool do we wish to be?".

I hike a lot in Camden Hills State Park, and I consider it a local treasure, but it is changing already. Invasive shrubs and vines are moving in, and I can imagine what it might look like 50 years from now, because I have hiked the AT through southern New England and NY/NJ. It's not the same forest hikers in the 70s and 80s experienced. In our park, invasive honeysuckle and bittersweet are showing up on and far off-trails. Invasive barberry and Euonymus and Norway Maples will follow. If property owners aren't asked to remove their own invasive plants, it might not be of much use to do the same in the parks.

45**. lloyd irland** lcirland@gmail.com

Key Take-aways:
1. Every recommendation in this draft depends on unspecified sources of funding. The next draft ought to suggest at least some possible models for this. As a wise individual once remarked, “Hope is not a strategy”.
2. The Council must come to grips with the issue of future sprawl and its effect on Maine’s energy intensity. To avoid this would be tragic. The NWL group is the right group to point this out.
3. This is the place to strongly advocate an ambitious program of converting state buildings and facilities to renewables and locally produced wood fuels on a top-priority basis. Don’t leave this to the other working groups.
How can state government announce ambitious goals for everybody else and remain silent about its own huge space heating needs?
4. By autumn, the WG needs to attempt at least minimal, but realistic, quantification of how these specific proposals, if implemented, would contribute to reducing emissions or increasing permanent sequestration.

General:
A lot of hard work has been done by this group. I hope and believe some mutual learning occurred. Little staff support was available, so details had to be left for later. This hinders the ability of the full Council to evaluate the proposals for feasibility and ultimate carbon benefit. Kicking the can over to the B/C analysis contractor doesn’t work as they will have very little expertise to bring to the table on these topics.
Reading the draft strategies themselves, nobody would suspect that the purpose is to sequester carbon. There is no indication how these various activities would contribute. In a few instances, it is hard to think of what the connection would be. All of these are good approaches to improved forestry. But which ones are most likely to contribute to the Carbon goals is impossible to tell, without knowing lots of program details which are in the future and pending realistic quantification of program impacts? References to theoretical potential in the aggregate do not help choose paths for specific means of reaching these results.
Compare, for example, to the Mar 30 Draft of the Building group, which contains many specific recommendations of a technological nature whose C benefits can be quantified. The NWL draft contains nothing of the sort. Of course, storing carbon in forests is much harder in a private landscape – we must account for behavior of numerous private actors.
The WG must include in its final recommendations to the Council serious work over the fall to fill in at least something on the many unanswered questions. Otherwise, how can the Council set priorities? Some useful work is underway at UMO. Possibly elsewhere – is anybody looking?
Further, it is strange that while the draft looks for money for many things it says nothing about the program we already have that does need money – TGT reimbursements. (as an elected local official I have a keener appreciation for this point than I once did).
For the Council to present useful legislation to the legislature, generalizations aren’t going to be enough.

If this is to be a survey, ranking the options, it is not clear how anyone would be able to rank these strategies according to their likely effects on future carbon sequestration. Even some rough, tentative indications of the scale of potential effort would be something.

Specific Comments

There is a lot to be said for a concentrated presentation as the PPT now offers. But it needs supplemental information so people can make the judgments that are needed to move forward. Many members of full Council will have questions. Anticipate and answer them now. These need to be read with the PowerPoint at one's elbow as I have not had time to transfer the text to this document.

Strategy 1.

In the overview, give a concrete example of how each of these goals would be served.

a. How do we decide whether protecting farmland or forest is a better opportunity?

b. Why place this limitation on the tools to be used?

c. Could be initiated now by administrative action. With the small amount of land that will be involved, not clear what difference it will make. Resilience may depend more on management than ownership.

Strategy 2.

Presupposes availability of money without even suggestion possible funding models. Not likely to get a positive reception. Stop sweeping TGT reimbursement under the rug – if we can't fund that, how can we fund the rest of this?

a. I am aware of no research-based analysis that suggests that Carbon payments are suitable for landownerships as small at ten acres. I fear that advocating such a small minimum lends an air of unreality to the whole document.

That said, b iii, iv and v all make sense.

What is vi? It's the law now… is there a need to introduce legislation for this?

Items c to f are lists of existing programs that say all the right words. But they give an evaluator no way to see what they really entail or how C storage or emission reductions would benefit.

Strategy 3.

a. Face directly the fact that the University is not interested in having an Extension forester. But it has bunch of people teaching gardening. Maybe give an extension program to some institution that wants to do it.

b. For all of these, need to explain what these practices are – e.g. define "natural climate solutions"-- and how they will contribute to C storage or emissions reduction, assuming they in fact do get adopted. Our experience with both ag and forest programs richly illustrates that there is a lot of slippage between advice, implementation, and long-term maintenance of practices. Council members will not be familiar with any of this. (give an example of how invasive species affect C one way or the other)

Strategy 4

If ever there were an opportunity for a ringing declaration on the importance of addressing sprawl it is now. The NWL Group is the right group to emphasize this, and I think it would be a tragedy to miss this opportunity. Reasonable estimates of potential sprawl over the coming 30 years or so are available, and this will prove to be a multiple of how much land in the 10 acre to 100 acre bracket can be enlisted in carbon projects, unless funded with unrealistically high subsidies.

It's easy to say, "Well, sprawl is complicated and it's outside the scope". This would amount to wishing the problem out of existence by defining it as out of scope. Incremental sprawl over coming decades will indelibly fix high rates of carbon emissions that will be highly resistant to change by any future policies.

Frankly, compared to what is called for, the recommendations on land use in this draft are disappointingly weak.

a.1. Good idea. Could start now.

a.2. Probably not necessary to go to the Legislature for this – anyway it's not a good idea to go there unless absolutely necessary. (remember what they did on LMFB, BPL, etc???)

a.3 Not sure what difference it will make but the LMFB can do this itself.

b. and c. (i) embody a contradiction – streamline, speed up, but have rigorous standards. Look how "streamlined" wind permitting went politically.

Not clear what c. ii really means. Is "balancing" in the eye of the beholder? Does it mean no solar farms on prime farmland?
Item d. Why not a specific goal on this for State owned buildings and the University? (not sure if the Buildings WG does this but it should; perhaps this point is not needed.
Item e. hard to oppose this, but as a priority for C action, and given funding scarcity, it will likely go nowhere.
Strategy 5
Sustained sources of funding are an endangered species. If some new one can be found there will be many competing applications for it elsewhere in the Council's recommendations. Some may prove more compelling, or at least better supported, than these.
Any incremental funding should not be just baseload funding to keep the U. doing what it's doing now.
Item b. also partner with the private colleges – why ignore them?
c. There is plenty of R & D capacity on this subject now. Maine does not need a "globally recognized hub for CLT "– let's keep UMO strong on what it is doing now rather than chasing big funding for a new product.
I would not support a broadcast application of carbon dollars to "research". It ought instead to be R, D & A -- Research, Development, and Application, with emphasis on D and A. We need to focus on engineering and application rather then basic science with any incremental funds. I'm not against basic research on climate change and adaptation/resilience/mitigation but we just don't need higher levels of it now. We have ambitious operational goals to meet now. Any expanded research program ought to have a tough-minded Advisory Board with teeth to vet proposals for their applicability in meeting the carbon goals of this Council. (is CFRU a good model?) There ought to be substantial efforts to make sure we are benefitting from what everybody else is doing – we do not need to grow all our own research.

46. **Gilbert, Thomas** Thomas.Gilbert@maine.gov

Please consider the following comments as part of your climate change mitigation strategy. Please consider these comments as my views as an individual and not necessarily those of the Department of Agriculture, Conservation and Forestry:
1) Which strategies seem particularly promising to you?
"Create new and update existing financial incentives and support for private land management and infrastructure that supports climate mitigation and adaptation."
2) What is missing?
An integration of habitat conservation within working lands.
2) Do any of these strategies concern you, and if so, why?
Section e. under draft strategy 2 states: "Increase funding for private and public road-crossing infrastructure, using Stream Smart practices for bridges and culverts, thereby reducing flooding damage and improving aquatic and terrestrial wildlife passage."
Although I am pleased to see this as one of your overall draft strategies, I would like to emphasize habitat conservation through impact avoidance. In forestry we put an emphasis on impact avoidance with use of quality temporary bridges. As Stream Smart principles indicate, using a temporary bridge is always a better option than constructing a permanent crossing, no matter how well it is constructed.
Funds for making temporary bridges more available have been limited, as RFPs tend put an emphasis on restoration of permanent crossings, often leaving working forests behind in efforts to support aquatic habitat.
Please consider funding a temporary steel bridge cost share program, to be administered by the Maine Forest Service, as part of any financial incentive program developed for a climate change mitigation strategy. This more directly addresses the needs of working forests in terms of stream connectivity and supports the needs of a significant portion of Maine's economy in response to increasing severe weather events due to climate change.

47. **Chalmers Hardenbergh** chop@atlanticnortheast.com

I am very glad to see this point:
Establish a stakeholder process to develop a voluntary incentive-based Maine forest carbon program for woodland owners of 10 to 5,000 acres, to increase carbon storage and encourage forest management while maintaining current timber harvest levels (See Question 6. Further details on Strategy 2a. Maine Forest Carbon Program Considerations)
My recommendation:
Develop a carbon offset program which would reward those of us which let our trees grow. California has such a program, but membership is limited to very large forests. Small woodlot owners should be able to join such a program. It would let users of carbon, such as those who fly, offset the carbon generated by rewarding woodlot owners to keep their trees.

48. **Hoar, Leigh E**. Leigh.E.Hoar@maine.gov

Draft Strategy 1 – Easements and Acquisition: Land conservation is an excellent objective, promotes landscape stability, and is one of the tools with which to mitigate climate change. With regard to forest land and harvesting, in instances where harvest limitations (as opposed to restrictions) are an element of deed or agreement language, fee acquisition is far preferable to easement for the sake of control of the land and the carbon it has the potential to sequester. Easement costs have grown increasingly expensive in the last 20 years and succeed primarily in protecting the land from development. Except in the case of development, easement language is frequently either too vague and open to interpretation or there simply isn't the will to pursue enforcement when violations occur period it is better to muster the additional funding required to purchase the land outright.

Draft Strategy 4 – State Programs and Climate Resiliency: Understandably, most of the focus of the working group has been on commercial agricultural and forested landscapes across the state. And with the exception of ecoreserves, those natural and working lands encompass the vast majority of the landscape we have the potential to positively influence through climate change mitigation practices. However, while they are minor components of the working landscape, it would be worth accounting for shrublands and grasslands that are not managed commercially. These lands comprise a small percentage of the landscape but support a disproportionate number of at risk species such as New England cottontail, Northern black racer and dozens of songbird species. These habitats also support game bird species such as American woodcock and ruffed grouse. I am not sure if these habitats are captured in any of the other working groups. Climate modeling data for these habitats is scant if it exists at all.

Management of shrublands and grasslands is accomplished mechanically and with prescribed fire. It is designed to maintain both habitats in an arrested form without commercial gain. Inland Fisheries and Wildlife accomplishes shrubland management with a strong network of high quality, reliable logging contractors and jobbers possessing equipment customarily used for clearing operations. Prescribed fire is used primarily for managing grassland and our partners include The Nature Conservancy, the Maine Army National Guard and the Maine Forest Service. While field mowing accomplishes our primary goal of preventing grassland from reverting to forest, it results in the accumulation of thatch which degrades, and occasionally prevents, song bird nest building capacity. Both habitat types have a role to play.

The Maine Climate Council has assembled a comprehensive list of strategies for mitigating the effects of climate change and it is not my intent to promote the development of a multi-volume treatise on ecology, wildlife habitat and its management. However, I do feel it is important to call attention to some of the less prominent aspects of the greater climate change and carbon sequestration conversation that impact wildlife.

49. **Kate Dickerson** kdickerson@mainesciencefestival.org

Strategy 4.d: "Reduce CO2 emissions from fossil fuels used for building heat/power by encouraging the installation of modern wood heat/power technology in homes, businesses, schools, hospitals and other institutions." I would encourage this to be changed to:

Reduce CO2 emissions from fossil fuels used for building heat/power by encouraging the use of cellulose insulation for those structures that require updating; the use of solar power in homes, businesses, schools, hospitals and other institutions when it has an advantageous return on investment; and the installation of modern wood heat/power technology in homes, businesses, schools, hospitals and other institutions.

I realize my comments could be considered outside the domain of the working group, at least with regards to the solar energy part, but I believe it makes sense to recognize the value of solar energy to this issue. And the use of cellulose as a source for insulation would be a boon to both Maine forestry and the environment.

Strategy 5. I believe that an additional point (e) encouraging the use of Cross Laminated Timber for all new construction (or at least for all new state-funded construction) would provide both leadership from the state as well as specific examples that the private sector can look to/learn from to encourage them to do the same.

50**. Eliza Townsend** etownsend@outdoors.org

The current pandemic is a sharp reminder of our collective and individual vulnerability. Lack of preparedness has not only caused illness and death, but disrupted food systems, costs thousands their livelihoods, and severely damaged our economy. The novel coronavirus has stolen many of our pleasures, including time with family and friends. In short, COVID-19 has given us a glimpse of the far more severe impacts of climate change. This experience should spur us to act with renewed determination to prevent the worsening of a trend that is already affecting Maine ecosystems and threatening both our health and our economic well-being.

Conservatively managed forest has tremendous potential to serve as a valuable climate change mitigation tool, and there are many opportunities to enhance carbon storage in Maine's forests. We estimate that AMC's 75,000-acre ownership in the 100-Mile Wilderness region has seen an increase in sequestered carbon of over 800,000 mT CO2e over the last decade. About 40% of this is in designated ecological reserves but nearly 60% is on lands actively managed for timber harvest, even while harvesting thousands of cords of timber per year.

We support your draft recommendations as far as they go but believe they should be both bolder and more specific. Please strengthen the recommendations as follows:

Draft Strategy #1

Create a dedicated, sustained funding source to conserve working forest, agricultural and natural lands...a) Increase permanent protection of forest land and farmland...via conservation easements and fee acquisition

While we support having the Trust for Public Land study the potential for a permanent, ongoing funding source for LMF, we believe the Maine Climate Council should set a specific near-term goal for land conservation measured in acres preserved or in dollars. One model would be the 2019 report of the Land Conservation Task Force, which calls for Maine to spend $75 million over 5 years. Please include more specific recommendations or at least options for this funding source, which could include a subdivision/permanent land conversion surcharge. New Hampshire currently funds the Land and Community Investment Program (LCHIP) through a $25 fee on documents recorded at Registry of Deeds. It also charges a 10% land use change tax on land removed from the current use valuation program; though in New Hampshire this tax goes to the towns, it could be directed towards land conservation programs. Maine might, for instance, redirect the penalty for removing land from Tree Growth prematurely. This comment is also relevant to Draft Strategy 2b.

Draft Strategy 1b should be expanded to include not only areas of high biodiversity value but also areas of high carbon stocking or high climate change resilience value.

Draft Strategy #2a: We are excited about this recommendation but believe the program should apply to landowners of all sizes. Maine's large forested landscape makes us uniquely well suited to help slow and mitigate climate change through carbon sequestration while engaging in timber harvesting. We previously submitted comments on the more detailed Maine Forest Service draft proposal. We don't know what form the final proposal will take, but we offer the following broad comments:

- It is not clear how the two goals of the strategy (increasing carbon stocks and maintaining current timber harvest levels) will interact or be prioritized. While harvesting timber and increasing carbon stocking are not incompatible (as demonstrated by AMC's experience), the focus of the program should be on carbon stocking. State forest agencies and others have struggled for many years with the question of how to encourage more small landowners to undertake active timber management. Various programs including educational, financial and technical assistance have been developed toward this end. However, we are concerned about trying to shoehorn this goal into a program primarily aimed at maintaining and increasing carbon stocking. Statewide harvest levels are governed by a wide range of fluctuating economic, ecological and social factors outside of the control of state agencies, and it is not clear how the state would evaluate the effect of a carbon storage incentive program on harvest levels. If landowners choose to prioritize carbon stocking over timber harvest that should be their choice.

- It is not clear from the strategy whether active timber management would be required for participation in this program. We would have strong concerns if this is the case. Over the near term, the best way to increase forest carbon storage is passive management (i.e. no harvesting) even if storage in harvested wood products is included. This may be contrary to the second goal of maintaining statewide harvest levels, and we understand the intent of encouraging landowners to practice "carbon friendly" timber management. If landowners can increase carbon storage while harvesting timber that is fine, and carbon-friendly practices should definitely be encouraged, but it should not be a requirement. Those doing the best job of carbon sequestration should not be excluded from a program that incentivizes carbon sequestration.

- We encourage the Council to think broadly and creatively about the ways in which a landowner carbon incentive program could function. There are a variety of tools and strategies that could be employed, and different approaches may be appropriate for different types of landowners. Examples of strategies that could be employed (short of permanent easements or public ownership) include:

o Term easements or temporary ownership by a public or quasi-public entity that seeks to increase carbon stocking over a set period (most likely 30 years), perhaps by specifying harvesting be limited to something less than 100% of net growth.

o A program that promotes and facilitates participation in existing forest carbon offset markets through aggregation of smaller ownerships.

In addition, we note that soils, too, hold carbon and we support recommendations such as Draft Strategy 2e that help to minimize soil erosion. To it we would add the need for strict adherence to Maine's successful Shoreland Zoning law.

Draft Strategy #4aii: The state's ecological reserve system provides some of the highest levels of carbon sequestration in the state, and they continue to sequester additional carbon at high levels. Yet at 90,000 acres, Maine's current system of ecological reserves falls far short of the 170,000 originally recommended. At a minimum, the N&WL Work Group should recommend adding 10,000 acres of ecological reserve to meet the cap established in statute. We note, however, that lands acquired specifically as Ecological Reserves are not counted toward the cap. Thus, we urge you to recommend that the state move swiftly and steadily to acquire an additional 80,000 acres in the ERS.

In addition, we recommend expanding the criteria for lands to be eligible for designation of ecological reserves to include mature forests (that may not meet the standard for "exemplary" natural communities) and lands with high climate change connectivity and resilience values, whether or not they contain specific biodiversity values (rare species or natural communities).

In conclusion, Maine is already experiencing the effects of climate change as evidenced in a rapidly warming Gulf of Maine, shortened winters, drought, more severe storms and attendant flooding, and shifting habitat. We owe it to ourselves, our children and our ecological resources to reduce further negative impacts. Please bolster the recommendations of the Natural and Working Lands Work Group to aid our political leaders in acting decisively to address this most serious threat to our future.

51. **Betty McInnes** bmcinnes@cumberlandswcd.org

The purpose of this memo is to offer feedback regarding elements missing from the draft and offer specific recommendations to be included as follows:

1) Strategy #1: Limit "leapfrog" and sprawl-type development by using fees and creating funding mechanisms to disincentivize commercial and residential development in isolated areas and encourage such development in a more efficient clustered pattern.

2) Strategy #2c: Commit State funding to Title 12 Subchapter 6: FUND TO ENCOURAGE LOCAL SOIL AND WATER CONSERVATION PROJECTS to encourage development of innovative conservation projects by soil and water conservation districts.

3) Strategy #2: Commit State funding to invest in urban ecosystems including agriculture, forestry, and landscape restoration programs.

4) Strategy #4: Consider a more specific description of the "planning tools" that will be encouraged, such as purchase or transfer of development right programs. Specifically foster low-impact development and green infrastructure mechanisms as part of land use planning and regulation and use the term "sprawl" to specifically identify unwanted development patterns.

5) Strategy #5: Put in place a more robust structure to identify, target and defend against invasive species.

6) Develop frameworks for evaluating mitigation and adaptation policies, strategies, and programs, with a supporting toolbox of methods and metrics. Include a mechanism for each policy, strategy, and program to evaluate effectiveness, measure progress and commit to terminate those that do not work.

52. **Chappen, John** John.Chappen@maine.gov

I work in the Lands Program of DIFW where we frequently utilize timber harvesting so the forestry topics in the draft really caught my attention. I very much liked what I saw but I have a couple of questions and comments.

Will there be specific definitions of terms like "landscape resiliency", "low impact timber harvesting", and "high quality logging"? I like all of those ideas, but they may mean something different from forester to forester, and more likely, forester to the general public. If there were certain metrics or specific goals and requirements to define these terms, it would help standardize them to make sure everyone was working together to achieve the same end goal.

53. **Karl Gifford** kgifford4@gmail.com

I am writing to you so my thoughts can be added to the public comments on the strategies to help reduce greenhouse gases and also help mitigate climate change in Maine's Forest Economy.

I am excited to see a proposal in 2a. for a program that allows landowners to increase carbon storage. However, the statement "to maintain current timber harvest levels" gives me some pause. Does this mean that keep the harvest levels where growth exceeds removal? That would be a step in the right direction, if however removal is exceeding growth (which in southwest Maine seems to be the rule rather then the exception) then having small landowners increasing carbon storage while overall the removal rate is greatly increased would only be paying lip service managing for increased carbon storage.

As a small woodlot owner, I like that strategy 2 builds on Maine's history of private land management but provides some financial incentives that will allow landowners to keep their land as a forest. Low prices for pulp wood, tax increases and a system that puts a higher price on development puts small woodlot owners at a distinct disadvantage.

I am very disappointed to see in strategy 4d. the support of biomass. The fact that biomass survives on subsidies should be reason enough to abandon this technology. But more importantly, it dumps carbon into the atmosphere today and puts the sequestration into the future, which is not a guarantee the sequestration will actually happen. And while young trees sequester more carbon, they don't store more carbon, that will be sixty to seventy years in the future. Maine can have a forest products industry that makes some room for climate change mitigation but not if biomass is supported by the state and the taxpayers.

54. **Anna Fiedler** anna@midcoastconservancy.org

I reviewed the Strategies Proposed by Maine Climate Council's Natural and Working Lands Working Group and see a lot of promise in these! Specifically, I felt there was significant promise in:

Draft Strategy 2 a.- establishing a voluntary incentive-based forest carbon program for woodland owners. I can see this as a reason for woodland landowners to begin to manage forests differently. I also wonder if Land Trusts would be eligible for this on fee-owned conserved lands?

Strategy 2b.- addressing land taxation policy. Providing tax incentives and using Current Use tax classifications seems like another way to strengthen a system already in place to improve forest carbon sequestration and maximize natural climate solutions.

Strategy 2e. - increase funding for private and public road-crossing infrastructure. I'm glad to see this included in the plan, as it will be a critical piece of keeping our waterways flowing in a way that reduces flooding and supports wildlife.

Strategy 3a. - I'm very glad to see adding "significant field forester capacity" is in this plan. For most private landowners, field forestry from Maine Forest Service is an invaluable resource for Maine's woodland owners. With the decrease in field forestry staff statewide over the last 10 years, especially, that resource has been lacking. Adding in technical support around adopting carbon-friendly resilient forests will be crucial to supporting carbon sequestration in woodlands across the state.

55. **Hilary Wallis** hnwallis@metrocast.net

I am a landowner and not a forester or a scientist, but I have given a lot of thought to climate change and carbon sequestration in recent years. Here are some comments on the Climate Action Plan, as Eliza Donoghue of Maine Audubon requested in her email of May 5.

Draft Strategy 1.a. I am an owner of a small woodlot in Southern Maine. I am planning a conservation easement on approximately 80 acres of forested land, with a goal of managing it to increase carbon sequestration. Because I feel strongly that this is necessary to mitigate climate change, I will do this regardless of tax benefits, but my heirs or other future owners may need financial support to achieve this goal, just as many owners of small woodlots will. I hope strategy 1.a. will encourage landowners to manage their working forests for carbon sequestration as well as for timber harvest. Good management will also benefit soils for the health of the forest and as carbon sinks.

Draft Strategy 2.a. I am in favor of this strategy if it can be fleshed out with sufficient strength and specificity. I understand that the removal rate of the past decade in Maine's forests has a ratio of 1.4x, which is enough to increase carbon sequestration over time - if forest management practices continue to produce that ratio. So, Maine must make those good management practices rewarding to landowners.

Draft Strategy 2.b.vi. Yes, Tree Growth Tax Law needs to be maintained, but with the understanding that forest management plans can include carbon sequestration as a goal.

Draft Strategy 4d. Despite the main goal of Strategy 4, "to address climate mitigation and resilience," 4d appears to support biomass production. Despite the April 2018 announcement by Scott Pruitt of the EPA that biomass is carbon neutral, many scientists, including a prestigious advisory panel to the EPA, have provided evidence that biomass is not a carbon-neutral form of energy production. From Bloomberg Green, April 7, 2020: "Valerie Thomas, a professor at Georgia Institute of Technology, has done research that estimates biomass emissions and accounts for the time it takes for trees to regrow. Assuming an 11-year growth cycle—typical for the U.S. Southeast—wood produces about 110 grams of carbon dioxide to generate a kilowatt-hour of electricity. That's lower than coal, which emits about 1,000 grams of CO2 per kilowatt-hour, or natural gas, which comes in at about 500 grams. But, she says, 'It's absolutely not carbon neutral.'" A consulting forester, Daniel Stepanauskas, wrote that "biomass clearcut takes 70 years to reabsorb the atmospheric carbon increase resulting from the harvest." Other studies give a range of 40¬–100 years. Furthermore, in Maine the biomass industry survives because of subsidies; it is not an economical use of forest products.

56. **Nanne Kennedy** queen@getwool.com

THANKS for keeping me in the loop. Struggling a bit digging in to "strategies" as many still appear to be "goals," the devil being in the details. I look forward to these becoming more refined into action plans, which is easier for me to react to or prioritize as an actual "strategy." I realize this is a work in progress.

There were many strategies that got fleshed out, for instance, in the Farmer Engagement process last year, then got lost in the ether when the plan was published in broader brush strokes. Not sure if specifics are what you are looking for, and certainly have plenty of notions of how to implement the areas of concern concepts detailed here as strategies.

As an aside, I urge you to align some of these with the AGCOM vision as it was collectively conceived to keep agriculture a viable industry endeavor, with farmer profit at the center of the matrix.

What comes to mind for specific strategies that could align, for instance, is mechanisms that pay renewable resource managers (farmers and forest landowners) for the carbon sequester service they provide as a public good and pay for out of their pocket. Of course, this requires a constant measuring mechanism, ceteris paribus. This seems to be an ongoing challenge.

Said renewable resource owner/operators could be rewarded through tax breaks on income generated in this resource economy, or credits accordingly. Not sure how, for instance, the group intends to "incentivize" or how financial support will be allocated or provided. There are too many organizations that create a circuit breaker for this support, where it ends up in their pockets, and trickles to the farmers as a "service," and does not have the benefit it is intended. Support programs need to be more direct. This should not be seen as another opportunity to create jobs in the service sector. A page could be taken out of the Marin County Ag Landtrust, where NRCS funds (which go to TSPs) are matched to go directly to the farmer for implementation and infrastructure investment, honoring the hours a resource manager provides to achieve the carbon service advantages.

One item that is missing has to do with Ag. Plastics. I know it is not a perfect fit, but it needs to be addressed. So, let's make it fit! Plastics are needed to provide cheap food, consumers are therefore the primary beneficiary, and should pay for disposal.

57. **Malcolm Hunter Jr** mhunter@maine.edu

I have reviewed the draft strategies document and I like what I see, such as the logic of organizing around farmland, forest land, and natural areas and giving significant weight to each sector. Much detail remains to be developed but let me delve into one important issue briefly. Of course, with Maine almost 90% forested, forests are the "elephant in the room" whether they are working forests or have been set aside through some form of protection. When I use the lens of carbon to look at Maine's forests, I like to compare them as they are now relative to what they were in the past and could be in the future. Whether you look back 500 years ago or just 50 years, it is clear that their potential for both carbon storage and sequestration, is far, far greater than is being

currently realized. We need bigger trees out there, from the perspective of carbon, timber production, ecological integrity, aesthetics, and more. I hope that as specific plans unfold that they are very bold with respect to increasing the stocking rates of our forests, primarily by allowing trees to grow much larger, perhaps to be cut as saw logs, perhaps to die and become snags and fallen logs (a key element of habitat for many wildlife species). There is a misconception that large trees do not sequester carbon very quickly and I encourage you to consider papers such as these:

N. L. Stephenson et al 2014. Rate of tree carbon accumulation increases continuously with tree size. Nature 507:90-93.

Andrea R. Urbano and William S. Keeton, 2017. Carbon dynamics and structural development in recovering secondary forests of the northeastern US FOREST ECOLOGY AND MANAGEMENT 392:21-35

Thank you for your attention and good work.

58**. Dembeck, Joseph** - NRCS, Skowhegan, ME Joseph.Dembeck@me.nacdnet.net

Overall, the draft strategies look great. Glad to see this effort from the Governor, her Commissioners, the Council and committees and working groups! This effort meshes well in important ways with Soil and Water Conservation District goals, so Districts should be considered key partners for implementation. Districts excel at landowner education and interface, having earned much trust over the decades by working with carrots instead of sticks. Further, the central mission of Districts, to promote soil and water conservation, is consistent with measures likely to be incentivized through these strategies, like the promotion of forestry and agricultural practices that help build soil carbon and store more carbon in plant biomass.

General Comments

1. Given the speed at which climate change is occurring, it is imperative that efforts are specifically identified and initiated by the State of Maine in the very near term (3-4 years versus a drawn-out period (i.e. greater than 5 years).

2. Efforts that are initiated need to be broad based through local, state, and federal organizations, both public and private. As is apparent with the current Covid-19 Crisis resiliency is based on a broad approach not a single track.

3. Incentives for “carbon friendly management” that focus on forestland owners (especially private small woodland owners) need to balance the needs of owners to harvest timber for economic and management needs and the necessary need for carbon sequestration in natural and working lands. Programs need to be diverse and vibrant versus a “one size fits none” approach.

4. Policies and strategies that are developed need to allow for new and continued research and data to be used to modify desired focuses and outcomes. Goals cannot be static.

Specific Comments

1. We are happy to see on slides 7 and 9 that the proposed strategy involves incentives for landowners (woodlot owners and farmers) to implement management practices that are carbon-friendly. A strong program in this regard would both: 1) incentivize landowners to retain large tracts of land instead of selling or subdividing, and 2) ensure that Maine’s forests and agricultural lands are managed in ways that promote carbon storage.

We are especially encouraged to see that the Council is considering tax incentives. Managing woodlots for timber revenue or agricultural lands for crop or animal-based revenue can be daunting to the average landowner. It is difficult to implement measures to reduce carbon release or increase carbon storage if those practices affect an already marginal operation. Taxes and road maintenance are significant costs for the average woodlot owner so incentives that encourage forest owners to implement carbon-friendly practices might include cost-sharing for

road maintenance practices that reduce sedimentation (e.g., gating during mud season, water bars, ditching on road sides that shunts runoff into upland forests instead of streams thereby building soils instead of degrading streams, wetlands or ponds) or help aquatic connectivity while accommodating more frequent and greater magnitude flooding (bigger, better-designed culverts). Obviously, forests can sequester and store carbon dioxide, helping reduce greenhouse gas emissions, but specific practices can leverage the amount stored. Examples of practices that could be incentivized include: reforestation (allowing forests to regenerate to mature forest from, for example, aggressive cutting from a previous landowner or reducing harvest frequency), improved forest management like thinning or stand improvements that sequester more carbon (for example by promoting biomass growth or improving soil health), avoiding deforestation of certain stands, and promoting BMPs that minimize erosion and build soils.

Other landowner practices that could be incentivized include allowing access to the public for compatible outdoor recreation (maybe include non-motorized access to certain areas, for example, since ATVs and snow sleds generate greenhouse gasses), or using land to produce a forest resource like maple syrup that enhances carbon storage. In addition to being carbon friendly, such uses could work in tandem with conservation so that resilience characteristics like biodiversity can be promoted. (Especially as compared to alternative activities, such as selling lands for housing development, that are not carbon friendly and can reduce landscape resiliency associated with features such as wildlife corridors and unfragmented forest tracts).

With both farms and forests, the use of BMPs to protect soils from erosion (e.g., no-till agriculture, timber harvesting in winter, leaving buffers adjacent to streams) will allow more carbon in the soils and in the plant biomass as a result of the better soils. Soil and water conservation are central objectives of the State's Districts. This objective will link well with the Council's charge to address climate change. No-till agriculture is an example of a measure that would both reduce the use of fossil fuels and conserve soil carbon and reduce erosion. A forestry practice that would do the same might be reducing harvest frequency to improve soils and carbon stores while increasing the long-term harvest value.

2. State policies to encourage and maintain forest and farmland practices can be leveraged by partnering with federal programs. The Council, therefore, should seek existing and future programs through agencies such as the NRCS to leverage State efforts. Slide 8 item c mentions the inclusion of climate change considerations in federal and state funding programs, however, one of the programs mentioned, the MNRCP, is a formal wetland mitigation mechanism and that will need to remain the overarching purpose of the program. In other words, any benefit to climate change measures might need to be secondary or incidental as this program is under the umbrella of Section 404 of the Clean Water Act –modifying it needs federal and program approval and needs. That said, leaving it makes sense since carbon storage is a wetland function that can be considered. For example, restored wetlands that are inundated and saturated during the growing season are able to build soil carbon as anaerobic conditions inhibit organic matter decomposition. Therefore, perhaps the MNRCP could encourage "wetter" wetlands that store more carbon. For example, a seasonally-inundated depressional marsh with very poorly drained soils would store more soil carbon than a hillside forested wetland that has somewhat poorly drained soils (seasonal saturation) and relatively more oxygen in the upper soil layers. As another wetland example, river and stream flooding might be expected to increase in magnitude and frequency with climate change; therefore, floodplain wetlands that help store flood-waters and attenuate peak flows might be prioritized using wetland restoration, enhancement and conservation programs like the MNRCP as acceptable by the program (including federal agencies).

3. Slide 5 has five worthy goals for the program. All five place people and communities at the center, which makes sense, however one of the five (or else the addition of a sixth goal) needs to emphasize natural habitats and ecosystem functions more. For example, coastal wetlands (weather or not they are part of the working landscape) will help Maine absorb higher coastal flooding levels, undeveloped riparian forests and wetlands will help attenuate increased flooding, and biodiversity in unfragmented forest interior habitats will bolster Maine's ecosystem resilience to higher temperatures, shorter-duration snow packs, or more frequent storms. The third bullet is the only goal where natural resources are singled out. Suggest changing it so ecosystem functions, whether or not they are part of the working landscape, are at the center. Wetland scientists performing wetland

function and values assessments are taught the subtle distinction between functions and values. Wetland values include social and economic values such as commercial fish and timber or recreational use that can be measured and assigned a monetary value. Maybe bullet 3 would be better worded:

"Conserve, enhance and restore ecosystem functions, including working (timber growth, ag lands) and non-working landscape features that provide important resiliency functions like shoreline stabilization, carbon storage, connectivity and biodiversity."

59. **Landis Hudson** landis@mainerivers.org

Thank you for taking on the huge and vital task of addressing climate change in Maine. We understand that a great deal of work is being done quickly in many Committees. We are grateful for this work. We do want to call attention to the fact that freshwater concerns and related hydrology don't appear fall to any one Committee but appear to be touched on by many. For example, we see that natural and working lands are largely disconnected from the water that runs through them.

Rivers, streams, riparian buffers, wetlands, lakes and ponds all are profoundly threatened by climate change, while conservation and restoration efforts have great value for access to habitat and adaption as the climate changes. To that end, we offer our recommendations and our profound gratitude for the work that you have taken on as part of the Maine Climate Council.

RECOMMENDATIONS

1. Create a dedicated, sustained funding source to conserve and restore aquatic connectivity to accommodate changing hydrology, enhance climate adaptation and resilience, support migratory and resident aquatic species, and reduce the spread of invasive aquatic species.

a. Adopt a Statewide policy to improve aquatic connectivity, reduce flood hazard, and support the restoration of native migratory and resident fish species that:

i. Creates incentives to improve the aquatic connectivity at private and publicly owned barriers (dams and road culverts) to achieve safe, timely and effective for fish passage; reduce the potential for flood damage; improve water quality; remove obsolete barriers and restore natural riverine processes.

ii. Improves State, federal, nonprofit and community coordination of freshwater and marine resources that are impacted by dams and culverts by the creation of a State Coordinator position.

iii. Conducts a review of Maine's Dam Safety program to determine how it can more effectively address present and future challenges.

iv. Provides technical assistance to dam owners including towns, individuals and corporations to improve aquatic connectivity, reduce the potential climate-change related flooding and improve habitat for native species.

b. Restore areas with exceptional biodiversity and potential the restoration of aquatic connectivity, including riparian areas, as informed by documentation of historical documentation, barrier prioritization tools, State watershed management plans, as well as Beginning with Habitat Focal Areas and other conservation planning tools from the Maine Department of Agriculture, Conservation and Forestry's (DACF) Maine Natural Areas Program and the Maine Department of Inland Fisheries and Wildlife (DIFW).

60. **Janet McMahon** janetsusanmcmahon@gmail.com

I am an ecologist who has worked throughout Maine on conservation projects for the past four decades (I worked on the ecological reserve system, for TNC, conducted natural resources for a number of state agencies, and continue to do conservation planning for land trusts and other private landowners). I've read through the NWL

working group's strategies and am impressed with the work that has been done. The strategies are excellent overall. Having said this, the approach seems fairly cautious and, as I see it, has the potential to take us only part of the way there. I'm sharing some concerns here. My thanks to the group for all the work they've put into this.

Strategy 1. This is much needed. I'm curious to know what funding sources are being proposed.

1b. I would add areas that protect/provide connectivity to this. Connectivity between source areas and hot spots is essential to protect biodiversity over the long term. Corridors could incorporate other values, e.g. stream protection, deer yards.

We don't have a handle on the state of biodiversity in Maine, particularly for plants, insects and other non-charismatic species. The last assessment was done in the 1990s through the Maine Forest Biodiversity Project. Anecdotal evidence, my own observations, and work being done by researchers at the University of Maine indicate that forest simplification is leading to a reduction in biodiversity - particularly for species that need large habitat blocks, forest specialists, and those that need mature forest conditions. I am concerned that we are accruing extinction debt here, as happened in much of Scandinavia. Commercially-managed land in particular is missing key elements (super canopy, sub canopy and shrub layers don't develop fully, the canopy doesn't close for long, there are few snags or big trees and very little coarse woody material on the ground, stream buffers are too narrow when present at all, the moss layer rarely develops, seeps and ephemeral streams are often compromised and more. The elephant in the room is the Forest Practices Act, which allows these practices to take place - even though they are taking a toll on biodiversity. I don't know the best way to address it, but it is a glaring hole. The voluntary steps proposed might be the best way to start, but it won't be clear how far this can take us and we don't have many years to deal with this.

Also missing is the role Maine plays regionally as a climate corridor, globally important bird area, and more.

I suggest that the state do a study similar to the one undertaken by the Maine Forest Biodiversity Project in the mid-1990s to assess the state of biodiversity at the species/community/ecosystem levels. This would also inform where to establish new ecological reserves.

Strategy 2aii.

An incentives-based carbon stocking program for smaller landowners is an excellent idea, as is expanding the current use taxation program. Again, we don't have a handle on how large-scale commercial management is impacting biodiversity as a whole. What will be done to address this (see my comments in strategy 1). How do large landowners fit into the picture? Are voluntary actions enough, or should we revisit how we regulate forest practices that are compromising biodiversity.

Strategy 3.

Great to see the emphasis on education. I'll mention the Maine Forest Biodiversity Project again here - they put out an excellent document called Biodiversity in the Forests of Maine: Guidelines for Land Management that is still very applicable today. As far as I know most landowners are unaware that these exist, and based on my field work throughout the state, the guidelines are unfortunately rarely followed. At any rate, I recommend they be republished and distributed widely.

Strategy 4.

It is time to expand the ecological reserve system - most reserves are in the northern half of the state and on existing public lands. The original study identified gaps which have never been filled. A private-public partnership makes sense - starting with an assessment of which communities and ecosystems are adequately represented (on state, TNC and other holdings) and which are are not. The original recommendations on reserve size assumed the surrounding "matrix" forest and lands served to connect reserves. Recent research by Simon Legaard and others suggests that this may not be the case for some species.

4b. These are incredibly important recommendations. Since achieving renewable energy goals will require basically electrifying everything, we will need to be incredibly strategic when developing energy infrastructure. We should be working to use existing transmission corridors, develop microgrids, increase distributed power and the like. The fragmenting effects of the current transmission system have never really been evaluated, but the total length of wires and number of acres impacted is already enormous. This should be studied and quantified to provide a baseline. We also need to get a better handle on the impacts of current corridor placement and management - especially around wetlands and streams. We could do much more to protect these- right now there are generally no buffers for any streams and herbicides are applied throughout. This has and will continue to impact water quality, quantity and aquatic biodiversity - especially for cold water species. We need to require more of CMP and others.

Strategy 5.

As mentioned, there is a critical need for baseline studies on the state's biodiversity over all, and on how forest management and transmission corridors fit into the picture.

61. **Jennifer Hunter** jh.yorkriver@gmail.com

Thanks for the chance to review and comment on the actions and strategies for mitigating and improving resilience to climate change. I appreciate the work all the groups have undertaken. With regard to the Natural and Working Lands Working Group, I found all the strategies/actions promising, and I am not concerned about any. My comments mainly address the "What is missing" category in your list of questions for consideration, and my focus is more on natural systems' resilience and adaption to climate change, less on mitigation.

Here are some general areas that I think are missing or could be expanded within the strategies. It's possible my suggestions are too far "down in the weeds," and not in line with the higher-level strategies the Working Group is developing, but I am including them for consideration as the group continues to think about strategies and develop actions.

1. Include more focus on regulatory tools for natural lands protection, in balance with voluntary options for conservation. For example (perhaps expanding on Strategies 4.b or 4.c.i.), strengthen protections under NRPA and Shoreland Zoning to (1) prioritize enhancing climate resiliency and (2) add additional priority habitats/natural communities that support resilience and biodiversity or are highly vulnerable to climate change as 'protected natural resources.' Updates to policies and regulations should be made to specifically include maintaining climate resilience in the intent and objectives, and metrics to evaluate impacts to resilience are needed for evaluators/reviewers of projects and permits.

2. Make sure that strategies and actions link to coastal systems. I'm aware there is a separate Coastal and Marine Working Group that will more directly address coastal issues and resources, however there will be areas where coordinated proactive strategies are needed across working groups (e.g., diadromous fish habitat, salt marsh migration into adjacent forested wetlands and uplands, minimizing flooding and erosion at a watershed scale, etc.).

3. Enhance linkages to wildlife and habitat protection for vulnerable or changing species/habitats (e.g., species and habitat migration corridors), including information and goals from the Maine Wildlife Action Plan that address Maine's species of greatest conservation need.

Finally, one specific comment on Strategy 3.c. that I support. I hope it's intended to be broad enough to include the ability to conduct many more habitat and species surveys - either by the agencies or in partnership with town and regional conservation groups.

62. **Michael Catania** michaelfcatania@gmail.com

Thank you for this opportunity to submit written comments to expand on the verbal comments which I have made in previous meetings. As you may recall, I have recently retired and moved to Maine after a long career as a senior

public official in several state and NGO environmental, conservation and agricultural agencies in New Jersey, and as an owner and/or operator of several working farms and forests. In the last decade, I have been heavily involved with dealing with climate change issues, and I have focused in particular on natural climate solutions which farmers, forester owners and public and private natural lands managers can use as a way to remove carbon from the atmosphere in order to supplement necessary reductions in greenhouse gas emissions as a way of meeting our ambitious, but necessary, overall carbon reduction goals.

Having participated in a number of your recent meetings via Zoom, and having reviewed the evolving Strategy Compilation document, I would like to begin by congratulating your group on the significant progress which you have made in a relatively short period of time. The April 27th draft is an impressive document which lays out a well-reasoned and feasible set of actions which would serve Maine well as we seek to counter the numerous adverse impacts of climate change. And I have been equally impressed with both the diversity and the expertise of the folks you have assembled to work on this effort.

I would now like to offer some specific comments on the numbered strategies. I am particularly supportive of the first strategy, to create a dedicated, sustained funding source to conserve working forest, agricultural, and natural areas, for I believe that this funding will be the critical first step in achieving so many of your other strategies, and the lack of a stable source of funding would likely thwart many of the actions which you seek to implement. Maine is fortunate to have so much acreage in working forests, farms and natural areas – all of which can and do serve as natural carbon "sinks." These areas help to offset carbon emissions and the numerous impacts of a warming world, while also providing food, forest products, biodiversity, jobs, and tourism dollars. Sustained funding for the preservation of these areas will allow Maine to not only permanently preserve more of these areas, but also to enhance the myriad of environmental and economic benefits which they provide.

Strategy 1 also recommends revising the scoring criteria for the various land conservation funding sources to incorporate climate mitigation and resiliency goals. This is a common-sense change which will help to maximize the benefits of preserving more natural and working lands by identifying and favoring lands which offer a higher level of benefit.

Strategy 2 wisely seeks to create and update existing financial incentives and support for private land management and infrastructure that supports climate mitigation and adaptation. The sub-strategies listed in this section provide a thoughtful menu of specific ways to incentivize the use of best management practices by private landowners, all of which should help to harness essential private actions to combat climate change.

Strategy 3 recognizes that providing technical assistance on natural climate solutions will be necessary in order to more fully enlist farmers, owners and operators of working forests and natural lands managers in a concerted effort to manage all of these lands in a way that can store more carbon. This Strategy also identifies the principal public agencies which will need to take the lead on providing this technical assistance – NRCS, Soil & Water Conservation Districts, and the University of Maine Cooperative Extension Service. Each of these agencies can help landowners and land managers to be better informed about how best to implement natural climate solutions. I would urge you to add some language in this strategy that acknowledges the important and numerous co-benefits of natural climate solutions, and to encourage these agencies to provide information not just about how to use natural climate solutions, but also why it is in the landowner/land manager's best interests to use these practices. For example, when farmers use organic methods, or other practices like cover cropping, composting, and no-till or no-till, they can lower the cost of their inputs and expenses for things like fertilizers, pesticides and herbicides, and fuel for tractors, while also enhancing pollination by native insects and birds, improving soil fertility, and increasing the ability of the soil to retain moisture, resist drought, and to be more resistant to erosion. Given the existing inherent risks of farming, and the fact that these risks will likely increase dramatically in the near future as a result of climate change, implementing natural climate solutions now can help farmers to lower their expenses, make their farms more resilient and less susceptible to erratic weather patterns, and thus make their operations more stable and more profitable. Similarly, the actions that managers of forests and natural lands can and should take to enhance carbon storage – like controlling invasive species, the use of careful and regular thinning to promote more uneven-aged stands – will also make these make these areas more resilient to disease and erratic weather,

and so should be welcomed by land managers. And the fact that recent scientific studies suggest that the widespread use of natural climate solutions may be able to offset as much as 30% of current carbon emissions makes promoting natural climate solutions an essential element of any overall strategy to address climate change.

Strategy 4 focuses on changes to state programs and policies to better address climate mitigation and resilience, and includes several excellent suggestions for how best to do this. I strongly agree with the importance of enhancing climate-friendly land management practices, and for the expansion of the Ecological Reserve System. Adding more acreage to ecological reserves is a proven strategy to enhance biodiversity, which, in turn, promotes healthier ecosystems and provides a wide array of co-benefits. And just as the fishermen who once opposed marine reserves learned that setting aside these areas actually resulted in increased populations of fish, better fishing and higher profits for fishermen, we also need to educate land managers about the long-term economic as well as ecological benefits of setting aside reserves that ensure the diversity of species needed to comprise healthy ecosytems. I also applaud the recommendation to use of state, regional and local land use planning as a tool to promote climate mitigation and carbon storage. And I concur with the merit of seeking no net loss of valuable working and natural lands, especially prime agricultural soils and forests (though I would urge you to add lands of high biodiversity and habitat value here). While this could well be difficult to achieve in practice, it is a worthy goal, and you should at least set ambitious targets for increasing the percentage of preserved lands in all three of these categories. The use of an in-lieu fee program, which has already been demonstrated as a successful tool right here in Maine, may well be the best way to pursue this goal.

I would, however, add one note of caution for the sub-strategy of promoting the burning of more wood as a way to reduce CO2 emissions from fossil fuels. Increasing the use of wood for heating purposes will not necessarily CO2 reduce emissions, especially in the short term, if more existing trees that are sequestering carbon are harvested to provide more wood for fuel. In fact, higher CO2 emissions could result from more wood-burning, and any strategy to promote more wood heat will need to be carefully designed and monitored to insure that the additional CO2 emissions produced by burning more wood are more than offset by the actual carbon stored in the near term by the planting of additional trees, and the use of state-of-the-art wood furnaces to minimize carbon, soot and other particulate emissions from burning more wood. Encouraging more use of wood products for things like outdoor benches, tables and other wooden structures on public lands might be an excellent way to increase the demand for wood products in a way that provides for long-term carbon storage with much lower emissions than burning wood for heat.

Strategy 5 appropriately focuses on the remaining essential element of the overall strategy – the need to expand, fund, coordinate, conduct and share the critical research that will be needed to drive implementation of all of the other strategies. While several other agencies will need to be involved with this research, I am impressed that this strategy recognizes two elements which are key to success here – some additional funding, and the designation of an agency to play a coordinating role. With respect to the latter need, it would appear that the University of Maine is uniquely qualified to play this coordinating role, though several other cabinet-level state agencies, other colleges and universities, federal and regional agencies, as well NGOs and private industry groups all have important roles to play in an overall research agenda.

Thank you again for this opportunity to comment on the April 27th Draft of the Strategy Compilation for the Natural and Working Lands Work Group of the Maine Climate Council. I trust that these comments will be helpful as you finalize this document, and please accept my compliments on an enlightened and comprehensive effort to promote the enhanced management of natural and working lands to help position the State of Maine to better address the coming impacts of climate change.

63. **David C Parker**, ACF parkr4st@maine.rr.com

I have reviewed the adaptation goals of the Groups as presented in the slide show report and some of the other documentation on the Group website. The conclusions and recommendations are based solely on the presumption there is global warming, that global warming is harmful, and has to be “fixed”. My opinion is that there is a total lack of evidence to support the presumption.
Having said that the draft strategies contain some valid strategies that if properly applied could greatly enhance

the very long-term production of wood fiber for many uses for the good of mankind with the benefits outlined throughout the strategies being realized without the obvious increase in taxation and application of socialization by government the plan outlines.

There seems to be a “we must fix a crisis attitude” involved in this proposed plan. The very “fixes recommended are what have caused the Maine forest to become what it is and will only continue to downgrade the forest in all aspects including production of high value wood needed to support high value product industrial businesses producing products for people to utilize, water quality protection, wildlife habitat productivity, and storage of carbon for those that need that “fix”.

The Maine forest has gone to “hell in a handbasket” in the past forty years as industrial forests in the north were delivered to “investors” and the southern Maine forests are continually “high graded” and developed. The principal cause of the demise of the forest is lack of management by foresters. The lack of foresters managing the forest can be traced to changes in tax laws, investment laws, and the most ruinous of all the laws the “Forest Practices Act” and subsequent harvesting laws which have removed Forestry from much of Maine forest lands.

As I look at the draft strategies while some are noble in intent most will require socialism to be implemented as most go against the grain of real Maine people. I also appreciated that these drafts are as they are by looking at the membership list of the Group and see the familiar list of organizations that depend towards socialization to exist. Real Maine people do not want any more governmental rules that will only make it more expensive to exist and to hold land where forests can grow.

Draft Strategy (DS) 1

The word sustained mixed with funding should be stated plainly. The proposal is to tax the masses and spend the money to satisfy the carbon storage believers. We have recently seen that it is not necessary to do anything but have an etiological pandemic, have everybody stay home and cut emissions associated with travel with very evident improvements in the air quality worldwide. The emissions problem is real and can be stopped in its tracks as evidenced by the last three months of history.

Increasing permanent protection of land in strategy (a.) is a noble goal. I own a farm with a conservation easement that was purchased and has both prime farm soils and woodlands. That greatest aspect of the easement is that there now is time to allow trees to grow for long terms of time which will result in high value wood that stores carbon by the ton every day the trees are growing. It will take several very large boatloads of money to purchase enough easements and fee land to fulfill the needed goal if the carbon storage is to be realized.

The problem in southern Maine that will spread north is people are migrating to Maine from away and the people in Maine have children who want to stay and thus development is removing the land from natural land cover types and agricultural uses. This is related to many factors one of which is the real cost of owning land with property taxes being the leader and the inability of the next generation to afford the costs.

DS 2

Financial incentives that are recommended will cost a vast amount of money to implement. The simplest incentive for people to retain land would be to rethink the property tax as it now exist. Landowners wanting to lower taxation can enroll in tree growth tax law or open space programs and hold the line for a period of time. The buyout penalties are way too low to stop development of the land. I recommend that a flat rate tax for forest and agricultural land be implemented to replace all of the programs. A tax of two dollars per acre per years for example an all forested land would make it affordable to retain ownership, cut land cost associated with maintenance of the programs and cause a great incentive to retain open land. Consequently, taxes on all other property uses would necessarily have to rise and the burden of taxes for community services would be shifted to developed land and uses which are the root cause of the need to raise money by property taxes.

(d.) This is an interesting statement that seems to imply there is low quality on-the-ground performance by loggers and refers to “low-impact timber harvesting equipment”. There is no practical correlation between any particular type of machinery and impact in the real world. There is a extremely evident correlation between any type of machinery and the people utilizing the machinery to harvest wood. I have seen the most ungainly, heavy machines used to do superb work and so called “low impact machinery destroy the forest soil structure because of the pride and attitude of the operators. The one factor I see that is constant is that forest industries do not discern that there is a difference in harvesting and refuse to buy wood from the poorly done harvesting job. The other factor that contributes to high quality logging is a well-planned forestry operation where the

forest harvest is regulated by the forester.
DS 3
The Maine Forest Service does not need to have any more people. The idea that forestry has to be provided by government is an insult to the forestry profession. There are many professions in Maine and to the best of my knowledge forestry is the only profession that has to compete with the “free” services of forestry available to the general public. Please let me know where I can get a haircut by a state employee at no charge.
The recommended solution is to provide education to all free enterprise foresters relevant to forest management that will increase forest carbon storage if it is really needed. Resilient and its derivatives should be removed from the language of this document. The forest is resilient with or without management. Don’t try to fix what God takes care of.

DS 4 (e.) is vital to the success of this program. If the masses are not brainwashed by this Gaia based folderol of climate control there would be no carbon problem. It seems to me that this Group has an obligation to society to educate society of the true origins of the climate change movement and its roots in pagan religion above any other work it may do. This ties to DS 5 where University of Maine will be used to make sure that the climate control agenda is pushed, and that real forestry will be put aside for sure. This is a total recipe for a disaster in the forest.
If you need a rule, it is simply” No tree shall be cut until the forester has put the paint on the tree for the long term benefit of the landowner”. The forests of Maine will store phenomenal quantities of carbon if it is not “high-graded “and trees are grown following available silvicultural guidelines to large sawtimber size. The loggers must be removed from the role of” foresters without license “through cooperation with all forest industry purchasing entities so that trees can be left attached to the stumps to continue growing and storing carbon.
In conclusion, I must say that your outlined plan is a disastrous path to proceed along. You will totally destroy forestry as a profession that will best function without government interference.
There will be laws needed and enforcement needed to attain any of the goals proposed. Enforcing the laws Maine now has would accomplish all of the proposed goals quite easily with a minimal cost to the people of Maine. The first law to enforce is the forestry licensing law increasing punishment for unethical performance by foresters and severely punishing persons doing forestry without license.
People in the unethical class or typically procurement foresters working to buy wood for logging companies and forest industries. These foresters are responsible for most of the over cutting and high grading of forest stands in southern Maine in current times.
The other class of “forestry without license” is typically person in the logging business who lie to landowners that a forester is not necessary because “they know what needs cutting”. These processes remove trees that are the winners in the carbon storage business and leave behind a forest that is low in production of high value products, low in carbon storage, may have some wildlife habitat value, has lowered water quality protection capacity and looks unsightly. The losers of such harvesting are the forest industry that will not have raw material in the future, wildlife, water, and landowners who now have the basis of a very poor investment. Society is a loser in the carbon business as less carbon can be stored in the low-grade forest.

64. **Michael Dunn** michaeldunn.maine@gmail.com

I am a long-time resident of Harrison, ME living on 70 acres of forested land. I wish to express some thoughts on the Natural and Working Lands Working Group strategies document. Overall, I think your draft is solid, well-crafted and supports goals put forth by various progressive and conservation-minded organizations. I put my comments in the context of your three questions.

Promising Strategies

Resiliency While I like all of the strategies, I'm very encouraged by Strategy #4. In particular, I'm excited by 4.a.i. and its idea of "enhancing landscape and species resiliency." Forestry in particular seems so focused on a few tree species even to the point of large swaths of monocultures. There is tremendous strength and resiliency in diversity, which includes diversity in forests, agriculture and people.

Competing uses of land I also like your mention in 4.c.i. and 4.c.ii. regarding renewable energy and land use. There can be competing claims to use land and there must be policies that resolve those demands in favor of the State's climate goals.

Success And you follow strategies 1 through 4 with strategy #5 which is all about getting feedback on what's working and what isn't. Bravo! You can't declare success or failure without goals and measurement of those goals.

What is missing?

Diversity While I see encouraging signs regarding species diversity (4.a.i.) and conservation of existing species (3.c.), I'd like to see specific mention of encouraging tree species that can provide not just carbon sequestration, but also food and food export. Here I'm thinking of chestnut, hazelnut and even yellowhorn (food and possibly diesel fuel). There are probably many more. Non-tree species such as hemp should probably be in the mix. I don't know how to word this and not be too specific, but I hope you get the idea that trees can be for more than just standard forest products like paper/pulp/lumber/biofuel. Thinking this way increases not just forest resiliency, but individual, farmer and community resiliency.

Multiple land uses Although I applauded 4.c.i. And 4.c.ii above, I really don't see specific mention of combined land uses such as solar and grazing animals on the same land. Somehow for me these strategies offer promise to resolve competing demands in favor of one of them. This is important, but we must explore ways to resolve conflicts in favor of multiple uses of land, like combining solar projects with grazing animals and combining various animals with tree crops. There are many people combining trees and animals such as Mark Shepard at New Forest Farm (newforestfarm.us) in Wisconsin.

Measurability I know this is a strategies document and not a goals document, but I do wonder what success would look like for some of these strategies. For instance, strategy 4.d. seeks to encourage "the installation of modern wood heat/power technology." Would you call it a success if the State created a program for such encouragement and not one piece of technology was purchased under the program? Or would it be a success if one efficient wood stove was purchased and installed by one homeowner and then you could say that CO2 emissions were reduced? Point is, how are these strategies and their embedded goals measurable? What are the metrics? What contribution to the State's climate goals should natural and working lands make?

Concerns

Culverts In strategy 2.e. culverts are mentioned specifically as part of forest/farm road infrastructure. I had the State Soil Scientist on my property once to help me evaluate options for a small woods road crossing a wet area/vernal stream. I can't remember his name now and I think it was his last year before retirement. He highly discouraged any sort of culvert. He highly recommended rip-rap structures because it allowed water to flow with these three characteristics: slow, cool, clear. Culverts encourage fast, warm and muddy, which is not good for water conservation or downstream temperature and clarity. I am sure there are times and places where one must have culverts to allow passage of wildlife, but they should not be seen as a panacea for all situations. Perhaps just removing "for bridges and culverts" would address my concern.

Biofuels Strategy 4.d. seems to specifically advocate for biofuels. I know that biofuel carbon is part of the short term carbon cycle and not the long-term (fossil fuel) carbon cycle, but it is still a carbon emitter in the short term of the next few decades. This is precisely against Maine goals and the science set out by the IPCC. Further, I think the jury is still out regarding the long term consequences to forests. That said, I'm not terribly opposed to burning wood for home heating in modern appliances. I'm very uncomfortable with larger scale wood burning including by schools, hospitals and industry. Even when it is done, there should be a way to close at least part of the loop by returning some of the minerals to the forests by returning the ashes to them.

Summary In summary, you can see that my comments are pretty minor for a document of such scope. I think the strategies as they are in draft are a huge step in the right direction. Thanks for all of your great work.

65 **Fritz Farquhar** fritz.farquhar@gmail.com

The goals and strategies, as articulated, seem well-reasoned and thoughtful. Any action toward reducing climate change impacts is certainly better than no action. I worry that it is too little too late. As a society, we tend to be reactive, waiting until the fire is at our feet to respond. This then makes me wonder if the goals and strategies are aggressive enough? And none of this matters if it is not backed by adequate resources to implement the proposed actions. A plan is useless if it is not supported by the will and wealth to make it happen.

As a culture, we tend to ask, "what's in it for me?" We are woodland owners, and philosophically, we favor conservation. That implies a level of altruism, which we can afford. Many landowners cannot afford to conserve, needing their properties to generate income. While it would be ideal that none of us requires incentives to do the right thing, that is unrealistic. So ultimately, a major issue has to do with the economics of doing what is right. Is the citizenry in line with paying out of pocket for all these programs? Covid 19 has brought into sharp focus the vast gap between the haves and the have-nots. Government subsidies have caused some wealth redistribution, but that is temporary. Those who are worried about where the next meal is coming from are not in a position to pay for saving the planet. So how is the fiscal portion of the puzzle going to work?

For all who are working on this critical effort, I offer profound thanks. This is a puzzle whose solution is critical for the future. My generation has contributed mightily to the mess we're in, and I apologize to those who follow for being bad stewards of Mother Earth.

66 **david schaible** timberlandconsultants@tidewater.net

I am responding to a message passed on from the Maine Forest Products Council on the Working and Natural Lands working group that is part of the larger Climate Change Council. My comments are specifically about hiring more Maine Forest Service (MFS) foresters to provide more landowner outreach and education on carbon friendly and resilient forest management practices. My view point is from that of a former MFS forester (10+ years) and a private consulting forester with nearly 50 years of combined practice and observations.

I do not have a problem with hiring more state foresters, provided they are involved solely in education and the promotion of better forestry practices on the land, especially for smaller, non-industrial owners in southern Maine. I would object if the overall purpose is for enforcement of more forest regulation. We do not need more regulations. I would also object if the purpose is to put more foresters on the land that will compete directly with private consulting foresters, which was somewhat the case until the state laid off most of its Service Foresters in the mid-1980's. After that lay-off, the ranks of private consulting foresters grew such that there were more practicing foresters on the ground working with landowners. Downsizing the ranks of state foresters did not feel so great at the time I was laid off from the State but in the long run it put more practicing foresters on the ground implementing of good forestry practices than the state would have ever hired. Some of those foresters hired additional personnel as their business grew. They also provided more diverse services than the state foresters did. The state should be promoting the use of private consulting foresters as they will expand the ranks and provide employment as the demand for forestry services increases with no additional expense to the state.

Every landowner has his own purpose in owning land. Some want to do what is best, some don't care about anything but income or some outcome, some will intentionally make things worse to accomplish some personal objective and others will want to do nothing. I have spent most of my nearly 50-year professional career trying to convince landowners to do the sensible thing. However, I am always amazed at how determined and pleased some landowners are with the complete mess of things they have made. After shooting themselves in the foot they may shoot the other foot too, for good measure. Unfortunately, poor forestry practices are everywhere, and they are often viewed as the norm or as the acceptable thing. That is a hard cycle to break. It will take a really strong effort to change that attitude. More active, high visible demonstration areas of sound forestry practices might help. A little "shaming" of the poorer practices might also help but gets into legal issues. Most landowners do not recognize the difference between a good job and a poor job (referring to residual stand following a

harvest). That is the crux of the matter. Also, what is observed on large tract in northern Maine is not what is best for smaller parcels in the southern part of the state. A distinction that should be made of the difference between industrial size forestry and smaller parcels. An educational point that also needs to be made is that in most cases, forestry jobs supervised by licensed foresters working in the landowner's best interest (with a fiduciary responsibility) have better long-term results that more than pay for the forester's involvement. That has been my experience.

Education and outreach should go beyond landowners. There needs to be more emphasis with loggers, generally a group that sees good forestry practices and sound silviculture as just complicating their business. Any limitations on what they harvest, they view as limiting in their ability to make a living. There are several groups working directly with loggers including the Master Logger Program, the Professional Logging Contractors, and Certified Logging Professional program. They all have a good purpose but now some of their members are actively telling landowners "you don't need a forester, I know what to do". Unfortunately, "what to do" more often benefits the logger and less the landowner and often to the detriment of the resource. This might also verge on the practice of forestry under the Maine Board of Licensure for Foresters except that Board has no jurisdiction over unlicensed persons (loggers). Maybe the definition of the practice of forestry should be expanded to include harvest prescriptions from anyone. It will also become confusing for landowners to hear from an expanded MFS education/outreach effort that the landowner should hire a forester (assuming that will be the message) and then have a logger tell them they don't need a forester, because he, the logger knows what to do. In my experience, the logger's story, the guy who will pay you, the landowner, money is often more credible to the landowner than the forester who is going to charge you money. Loggers are also not shy about twisting the facts or outright lying to sway/convince landowners--we will just cut the big trees so the little trees can grow, when in fact the little trees have little life left in them. Outreach to loggers will be difficult unless through organizations they have some confidence in. The MFS, as a regulatory agency, may not be the best approach. Foresters depend on loggers to implement sound silvicultural/harvesting practices, so loggers are a key component. They believe they know more about forestry than foresters, but they don't.

Education and outreach should include foresters as well. And for some this gets close to the same as educating loggers. There are a lot of forester/loggers in the woods. They advise the landowner what to do then buy and cut the landowner's wood. There are also a lot of foresters with mill contracts and foresters directly procuring wood for wood buying mills or brokers and more and more loggers are hiring foresters to do nothing more than procure wood for their employers to cut. Loggers who for years would not work with or avoided foresters are now hiring them to procure wood. They have found that a forester may give them some extra credibility with the landowner who believes he is getting a good job and fair price for his wood. That is often not the case. In some cases, procurement foresters are writing or rewriting forest management plans prepared by others tailored to the poor cutting they plan to do. A forester working for a logger or wood buying mill is not usually looking out for the landowner's interest. The above are obvious conflicts of interest that most landowners do not recognize. The forester is ethically bound to his employer, not the unsuspecting landowner. Harvesting practices have gone more to high-grading (cut the best, leave the rest) while leaving the woods nice and neat looking but in poor growing condition. The outreach to foresters should be both technical but more importantly, ethical. If the MFS expands its outreach to include referrals to other foresters, it should be sure the referrals go to ethical practitioners. The Maine Board of Licensure for Foresters needs to emphasize ethical practice more, through education, revised rules or a tiered licensing system distinguishing foresters for hire by the public versus foresters working for a wood buying entity. Landowners who have been taken advantage of by a forester seldom file complaints with the licensing board because they do not know they have been taken advantage, don't recognize the poor forestry practice of or are too embarrassed/ashamed to admit it.

Finally, if more education and outreach to landowners is a route to go, there are foresters other than state employees who may well be interested in such work on a contract basis to the State. They may be retired, less active or simply willing to take on a different type of work. They should certainly have the knowledge and familiarity with their immediate areas, current forest conditions and the practice of forestry. This might include programs for large groups, woodlot tours or meeting landowners one on one. There would have to be some stipulations that such work not be self-promoting.

67 **David Moskovitz** david.moskovitz@gmail.com

First, in the way of background, I served as a Commissioner of Maine's PUC from 1984 to 1989. After leaving the PUC, I co-founded The Regulatory Assistance Project (RAP, www.raponline.org), a non-profit that provides advice and education to energy and environmental decision makers in the US, EU, China, and India. Our focus is on creating practical policy options to address climate change. Most of our work relates to the power sector, not forestry or agriculture. Nevertheless, I have taken a keen interest in both since 1978. For decades we have operated a large organic farm and have owned and managed an even larger amount of forestland (currently about 1200 acres). We have received awards for both our farming and forestry activities including Tree Farmer of the Year for Maine and the Northeast Region in 2014. I founded the Hidden Valley Nature Center, a 1000-acre nature center in Jefferson, Maine which in 2016 merged with three other conservation organizations to form Midcoast Conservancy. I serve on the boards of both Midcoast Conservancy and The New England Forestry Foundation (NEFF). My comments are informed by my life's work with RAP and my personal involvement in forestry, farming, and land protection. Overall, I find that the ambition reflected in the recommendations falls far short of the potential or the need for bold action on climate. Maine's ambition needs to be shaped by the magnitude of the problem globally. Maine's forests alone hold the achievable potential to make Maine deeply carbon negative. The same cannot be said of most of New England or the US.

Work done by NEFF shows how the combination of widespread adoption of their "Exemplary Forestry Standards" coupled with a concerted effort to shift commercial construction to mass timber technology can deliver what is needed. It does this while supporting a vibrant forest products industry. The question for the Climate Council is what policies can most efficiently deliver this potential and what are the best approaches we can pursue to raise the funding needed to implement those policies.

The urgency for funding is made clear; even the modest policies the group suggests notes in at least three places that funding sources are needed. Here, Maine's experience with The Regional Greenhouse Gas Initiative (RGGI) provides many good examples to build on.

- It is a regional approach that recognizes that states like Maine can provided needed carbon reductions for states with a much larger power demand and fewer low carbon power options.

- It provides a market driven source of funds that all states can use to reduce their carbon emissions.

- It provides a market framework that can adapt well to changing conditions and new science.

In sum, there is nothing in the group's suggestion I disagree with. They just fall far short of what is needed and what is achievable. With time running out, the Council needs to get ambitious and creative quickly.

68 **Paul Johnson** skoghem04963@outlook.com

I support the Maine Climate Council's Adaptation Goals, especially Fostering" the Value of the State's Natural Resources and Natural Resource Industries. I also support all 5 of the draft strategies developed by the Natural and Working Lands Group. Adequate funding will be the key to success at implementing these strategies. Therefore, my priority lies with the first strategy. Creating a dedicated, sustained funding source will be the real challenge given the State's present economic situation resulting from the coronavirus.

69 **Satkowski, Laura** - NRCS, Augusta, ME Laura.Satkowski2@usda.gov

Thanks for providing the opportunity to comment on such an interesting framework! The document looks great, and I am particularly curious to see opportunities you come up with to increase carbon storage incentives for working lands.

I am wondering if food is included in a different working group or if it is under the umbrella of agriculture. Regardless, I think it is important to account for and try to reduce emissions from food waste. According to Project Drawdown, food waste account for about 8% of global emissions. 1/3 of the food we produce does not make it

into people homes or restaurants. This generates greenhouse gas emissions from growing food and methane from filling landfills. Project Drawdown estimates if 50-75% of food waste is reduced by 2050, we could reduce emissions by 10.3-18.8 gigatons of carbon dioxide equivalents. Is food waste emissions being included in one of the workings groups?

70 **Harris, Anna** anna_harris@fws.gov

Thank you for the opportunity to provide feedback on the draft strategies developed by Maine's Climate Council subcommittee on Natural and Working Lands. We applaud the committee for outlining strong recommendations for Maine's future related to climate mitigation and adaptation for forestry, natural lands, and agriculture. The mission of the U.S. Fish and Wildlife Service (Service) is to work with others to conserve, protect and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people. The draft strategies developed by the Working Group align with the Service's mission and we look forward to working with the State and partners to address the impacts of climate change.

The Service offers the following overarching perspectives followed by strategy specific feedback in the attached document.

• We are pleased to see land conservation for biodiversity highlighted in the scope of work and draft strategies. Protecting high-value fish and wildlife habitats and their ecological, social, and economical benefits is an important strategy in improving the resilience of Maine's communities. We encourage the working group to incorporate this more specifically within the strategies and recommendations.

• Maine's lands and waters play an important role in climate adaptation and mitigation. For example, saltmarsh systems sequester significant carbon and provide for community and infrastructure resilience. The draft strategies and recommendations should clarify or expand upon how aquatic systems, both fresh and salt water, associated with natural lands will be addressed.

• The Service is in support of the emphasis on a clean energy economy as outlined in the strategies. The draft strategies should consider providing a recommendation on how to balance competing uses on the landscape.

Thank you for the opportunity to provide feedback on the draft strategies. Attached you will find more specific comments for your consideration. Please let us know if you would like to discuss further or how we can assist you in reaching your climate goals.

The following are strategy specific comments for the Working Group's consideration:

Strategy 1.b. is particularly promising to the Service and we are pleased to see the important topic of land conservation for biodiversity highlighted in the draft strategies. There is research, mapping, and modeling from the University of Maine, The Nature Conservancy, and others that has identified species, and their habitats, most sensitive to the impacts from climate change. We encourage the working group to include as a recommendation efforts to formalize collaboration and coordination to address this important opportunity.

Strategy 1.c Based on federal appropriations, the Service offers many grant opportunities for land and water conservation, such as North American Wetland Conservation Act grants and Coastal Wetland Act grants, among others. We would like to work with the Working Group or another relevant entity to explore this strategy further.

Strategy 2 .a. Consider revising language to encourage incentives that support both timber production and ecological biodiversity values and to also incentivize extended participation for permanent land protection.

Strategy 2.b.e. Aquatic connectivity work within the State of Maine would benefit from State led coordination and sustained funding. Such an effort would help bring additional resources from outside the state to assist with infrastructure and adaptation efforts on public and private land. This could lead to a more focused effort by maximizing capacity and resources more efficiently across agencies and partners. It is also recommended that this strategy be strengthened to include coastal lands and waters and reference tidal crossings and barriers. The

CoastWise approach for tidal crossings, currently led by the State, will help to address complicated sea level rise and flooding issues affecting important coastal lands.

Strategy 4.d. Consider adding to the recommendations development of guidance or best practices for reducing fossil fuel use in land management or maintenance activities.

Strategy 5.a.ii. This is a priority for the Service and we recommend highlighting this strategy as a standalone sub-strategy under Strategy 5. We think it is particularly important to emphasize the development of land management strategies and watershed planning to strengthen the conservation of climate-sensitive habitats.

71 **Simon Rucker** srucker@matlt.org

The Maine Appalachian Trail Land Trust would like to express overall support for the Natural and Working Lands Group draft strategies 1 to 5. The goals of the Maine Climate Council are ambitious and present a bold vision of a future in which the State is in the vanguard of facing one of the world's greatest challenges. One of Maine's greatest assets has always been its landscape; crafting strategies that leverage this landscape for the climate mitigation benefits is playing to this strength. At the same time, Maine needs to find a way to leverage these benefits for its people and communities who live in, and depend on, this landscape. The Natural and Working Lands Group has outlined a series of strategies that aim to do both and the Maine Appalachian Trail Land Trust thanks them for their efforts.

Comments on specific strategies are indicated below:
1c. Revise scoring criteria for state and federal land conservation funding sources (e.g. Maine Natural Resource Conservation Program, Land for Maine's Future Program, Forest Legacy Program, and Maine Outdoor Heritage Fund) to incorporate climate mitigation and resiliency goals into grant criteria and project selection
Conserving working, agricultural and natural lands is perhaps the most efficient strategy towards reducing and mitigating emissions. Permanent protection prevents conversion of land to commercial uses which, while occasionally compatible with carbon goals (i.e. working forests), generally reduces carbon storage opportunities. Retaining areas of exceptional biodiversity value will almost certainly be attained solely through conservation solutions. The Maine A.T. Land Trust has incorporated climate mitigation and resiliency data into our conservation selection methodology with an aim of enhancing the Appalachian Trail's goal as a climate corridor.
2a. Establish a stakeholder process to develop a voluntary incentive-based Maine forest carbon program for woodland owners of 10 - 5,000 acres, to increase carbon storage and encourage forest management while maintaining current timber harvest levels.
Recommend teaming with cross boundary initiatives seeking to create incentives for small forestland owners to store carbon. These include the Family Forest Carbon Program under development by TNC and the American Forest Foundation or the Vermont Land Trust's land owner aggregation initiative . A great deal of work has been done on this to date. Maine landowners will benefit from this through lower transaction costs and more competition from professional carbon service providers if the incentive program is similar to others. Also recommend that a funding be made available to landowners to pay for some of the costs associated with aggregating projects. These include legal and consulting fees to set up projects.
b. Address land taxation policy through legislation introduced by the Governor
Providing financial solutions for woodland owners can help land trusts, many of whom own lands of 10 - 5,000 acres, pay for stewardship and ongoing land management costs that are otherwise solely borne by these nonprofit organizations. Land trusts have generally not had the option of leveraging ecosystem services,

including carbon mitigation, on their properties for financial benefit. They struggle to raise funds from members, foundations and donations - all sources that are unpredictable - and yet maintain trails, preserves and boundaries on publicly-accessible lands. Harvesting timber is a revenue option for some organizations but not all lands have marketable stands; it also impacts public recreation and is often restricted by on preserves due to the presence of protected natural areas. By leveraging carbon mitigation for financial support, land trusts can find a way to support stewardship that does not impact their lands. This would benefit not on the land trusts but the public who access these lands for health and wellness and gain economic benefit from visitors, but would help the State to reach the Maine Climate Council's goals.

3. Provide technical assistance on natural climate solutions to landowners and producers

a. Forestry Assistance: Add significant field forester capacity to the DACF's Maine Forest Service to support landowner adoption of carbon-friendly and resilient forest management practices, through outreach, education, and technical assistance. **Include foresters with training in biometrics and carbon accounting. Only a fraction of practicing foresters are functional in these areas**.

4. Update and refocus state programs and policies to address climate mitigation and resilience

a. Continue and enhance climate-friendly public land management practices

i. Update DACF's Bureau of Parks & Lands Integrated Resource Policy (IRP) to incorporate current climate science and management priorities for enhancing landscape and species resiliency and mitigating climate change

The Appalachian Trail corridor and the lands within one mile of the footpath contain the largest area of climate-resilient lands in the entire State of Maine. Incorporating the latest science and expanding the Ecological Reserve System can help to take advantage of the existing backbone of the A.T. as the largest climate corridor in the eastern United States, of which approximately 282 miles occur in Maine. In 2014, the Maine A.T. Land Trust adopted a resolution endorsing the concept of the Appalachian Trail as a climate corridor. Since then, strategic conservation planning has shown that this corridor is the locus of many overlapping values: the most climate-resilient lands are also the lands with the most biodiversity; the lands with the greatest concentration of rare/threatened species; the lands with the largest forested blocks; the lands with the areas of greatest scenic beauty; the lands least impacted by human influence. By updating the Bureau of Parks & Lands Integrated Resource Policy to reflect climate goals, this can help protection efforts based on a broad set of conservation and recreation values. The State of Maine can further assume the role of leading and coordinating efforts in land use planning and policies towards attaining the Maine Climate Council's goals. The Maine Appalachian Trail Land Trust wholeheartedly supports the updating of staffing in order to comprehensively implement these strategies.

5. Strengthen research and development, and monitoring of climate mitigation and adaptation practices

c. Continue to invest in the University of Maine research facilities in their efforts to become a globally recognized hub for climate-friendly bio-based wood market innovation; issue an Executive Order to seek opportunities in State construction projects to use Mass Timber (including Cross Laminated Timber - CLT) building technologies, and to encourage related manufacturing facilities to locate in Maine. **Recommend that Maine's federal representatives advocate for an expansion of the New Market Tax Credit program with specific set asides for climate-friendly manufacturing investments, such as CLT.**

72 **Jennifer Melville** jmelville@osiny.org

The Open Space Institute (OSI) commends the Maine Climate Council's Natural and Working Lands Working Group for crafting a robust and innovative set of recommendations for public consideration. OSI staff has regularly attended the Working Group's meetings and appreciates the careful consideration the co-chairs and other work group members have given to reviewing a host of different ideas and for culling these down to top priority actions. We also appreciate the many opportunities provided to provide meaningful feedback to the Working Group.

Investing in Maine

The state of Maine can have an outsize impact on combatting climate change in the northeast because of our productive and abundant forests. As the Climate Council has heard from University of Maine scientists, Maine's forests already offset at least 55% of the state's emissions. Our colleagues from New England Forestry Foundation and The Nature Conservancy have shown that through improved forest management and increased land protection, our forests can sequester and store a much great proportion of the region's carbon emissions while also sustaining a strong forest products industry. In addition, as wildlife shifts in response to climate change, Maine's forests, rivers and wetlands will provide essential refuge for species moving northward and upslope. We encourage the Working Group to boldly assert the essential climate mitigation and adaptation gains that Maine can make if we better manage and protect our forests.

We urge you and the Governor's Climate Council to continue to move forward in investing in Maine's climate change solutions. Maine's leadership in implementing a wholistic approach to combating climate change is critical to attracting investment from the private sector, from funders like OSI, and from the federal government. In light of the pandemic, we understand that the state will face enormous budget challenges. Yet investing in Maine's climate mitigation and adaptation efforts are all the more important now. The impacts of climate change are already negatively influencing our resource-based economy and our communities. The current health crisis has pointedly illustrated just how essential our natural resources are to our livelihoods and way of life.

OSI supports all of the Working Group Recommendations. Given our area of expertise, we particularly want to emphasize our support for recommendations #1 and #4.

Recommendation #1 calls for a permanent, durable source of land protection funding, which is essential to meeting our climate goals. Maine citizens overwhelming support land conservation, as evidenced by every Land for Maine's Future bond referendum and many polls. Land conservation funding will enable Maine's landowners, land trusts and natural resource agencies to store and sequester carbon and harbor wildlife habitat on their lands. We urge the Climate Council to consider an array of potential funding sources and not be limited by past approaches. We especially support those funding sources that don't draw on the state's general fund revenues.

To address pressing climate changes, it is essential that the state use and distribute scarce land protection funding based on sound science that ensures projects achieve the greatest mitigation and adaptation benefits. Thus, we strongly support the sub strategies that call for increased land protection and changes in the state's scoring criteria to include climate resilience and carbon sequestration. Specifically, we would encourage the Council to recommend that Land for Maine's Future and other state grant programs, include criteria that favor projects – both forest and farming – on lands with high carbon stocks and/or that are likely to sequester significant carbon. Further we recommend that state funded projects include land management regimes that will maintain and/or increase the sequestration and storage of above and below ground carbon stocks.

OSI is also strongly in support of Recommendation #4, which calls for climate-friendly public land management practices. In addition to the key strategies listed in 4(a) we also recommend the following:

- Incorporate land management terms into state held conservation easements that encourage the sequestration and storage of carbon. Examples include protecting stream buffers and promoting improved forest management practices.

- Based on scientific data that shows the climate mitigation and adaptation values of reserve areas, increase the acreage limitations for the state's ecological reserve system. Establish and expand reserves on lands with high carbon storage and high climate resilience attributes. Identify and permanently protect areas with high below ground carbon stocks, such as wetlands and other organic soils, and forests with high above ground carbon stocks.

- Manage state owned conservation lands to increase carbon storage and maintain climate resilience.

About the Open Space Institute

OSI protects scenic, natural and historic landscapes to provide public enjoyment, conserve habitat and working lands, and sustain communities. Founded in 1974, OSI works throughout the eastern United States, where it has been a partner in the protection of over 2.2 million acres of land. In Maine OSI has provided over $10 million in grants to help the state and land trusts protect more than 1 million acres. We have also provided technical assistance and capacity grants across Maine to help land trusts learn about and incorporate climate change considerations into their land planning efforts. OSI staff look forward to continuing to work with Maine citizens, land trusts and government agencies to further Maine's climate goals as we develop and implement our funding and outreach programs.

73 **Robert Bryan** rrbryan.54@gmail.com

Backcountry Hunters and Anglers (BHA) is the fastest growing hunting and angling group in North America. BHA seeks to ensure North America's outdoor heritage of hunting and fishing in a natural setting by supporting land conservation, public access to hunting and fishing areas, and sound management of fish and wildlife and their habitats.

Our members our very concerned about the potential long-term impacts of climate change on native fish and wildlife and their habitats. Broadly speaking, the BHA New England chapter and its Maine leadership team support the recommendations in the current draft strategies of the Maine Climate Council's Natural and Working Lands Work Group. However, the recommended actions for fish and wildlife habitats are not as robust as those for other areas addressed in the strategies. In the paragraphs that follow BHA has identified several strategies that should be included in the Maine Climate Action Plan to help ensure that the impacts to fish and wildlife and the outdoor recreation economy as result of climate change are minimized.

Draft Strategies

1. Create a Dedicated, Sustained Funding Source

In addition to the draft strategies, BHA recommends:

1.b. Prioritizing landscape-scale conservation projects that reflect regional habitats, needs, and conservation opportunities. Rationale: While areas of "areas of exceptional biodiversity value" as currently recommended in the draft are important, these can often be small in scale and may represent habitats that cannot be maintained in many climate change scenarios. On the other hand, landscape-scale projects are more likely to result in greater built-in resiliency and offer more management options. (1.b)

1.c. Ensuring that public access for recreation, including hunting and angling, remains a priority in scoring systems for project funding.

2. Create New and Updated Financial Incentives and Support for Private Land Management

In addition to the draft strategies, BHA recommends:

2.b.v(1). When providing tax incentives under the wildlife habitat criterion of the Farm and Open Tax Law, include "key habitats" and habitats for state-identified Species of Greatest Conservation Need, as described in the Maine Wildlife Action Plan, wherever these habitats occur in parcels of sufficient size to provide conservation values, either by themselves or as a component of habitats at the landscape scale. Rationale: The current Work Group draft limits the recommended application of the wildlife habitat criterion of the Farm and Open Space Tax Law to "parcels of exceptionally high biodiversity value," but the Farm and Open Space Law definition of "wildlife habitat" is not limited to those parcels only. Maine's wildlife legacy and healthy wildlife populations depend on conserving abundant quality habitat at the landscape scale (see 1.b, above), but this habitat may often be made up of parcels that are dominated by relatively common, matrix-forming plant communities. A narrow focus on parcels with "exceptionally high biodiversity value" would greatly limit the potential of tax incentives to help protect and manage wildlife and wildlife habitats threatened by climate change. Such a high bar would be inconsistent with the broad range of eligible land that qualifies for farmland, open space, Tree Growth tax incentives. Furthermore, Maine's landowner profile and ownership attitudes are changing, as reflected in the National Woodland Owners Survey. This survey shows that Family Forest owners primarily own their land for amenity reasons associated with beauty, privacy, wildlife, and nature protection, not timber. For tax incentives to be an effective wildlife habitat strategy and conserve enough land, tax incentives should clearly target the interests of this landowner group.

2.b.v(2). Tiered tax incentives should be offered for wildlife habitat protection. For example, greater tax incentives should be offered for land managed under an approved habitat plan that includes climate mitigation and adaptation strategies for habitats used by Species of Greatest Conservation Need. Additional tax savings should be offered to landowners who allow access for hunting and fishing on their property.

3. Provide Technical Assistance on Natural Climate Solutions

No additional comments

4. Update and Refocus State Programs and Polices to Address Climate Mitigation and Resilience

In addition to the draft recommendation, BHA recommends:

4.a.i. Management plans for Wildlife Management Areas managed by the Department of Inland Fisheries and Wildlife should incorporate strategies for enhancing landscape and species resiliency and mitigating climate change. Rationale: The draft includes similar recommendations for the Bureau of Parks and Lands, but DIFW lands have been omitted.

5. Strengthen Research and Development, and Monitoring of Climate Mitigation and Adaptation Practices

No additional comments

In conclusion, we would like to thank the Natural and Working Lands Work Group for the excellent work on its draft strategies, and for giving Backcountry Hunters and Anglers the opportunity to comment. We urge you to strengthen the focus on fish and wildlife habitats by incorporating our recommendations into the next draft of the Work Group's strategies. Please don't hesitate to contact us if you have any questions or would like to discuss the preceding recommendations in greater detail.

74 **Melanie Sturm** msturm@nrcm.org

We appreciate the time and energy each of you have devoted to generating and deliberating ideas to put forth to the Maine Climate Council. We also want to acknowledge the leadership of the Mills Administration in keeping climate action a priority throughout the tragic and trying circumstances of the coronavirus pandemic. This undertaking, to develop strategies and initiatives to help the state achieve its climate objectives and to ensure industries and communities are resilient to change, is an extraordinary opportunity to take bold steps to move

Maine toward a more sustainable, equitable future. Thank you for having a transparent and open process with opportunities for public and stakeholder engagement.

We believe your five strategies are very good and would be positive actions to take; however, they could be much stronger and more ambitious. Also, we believe it is the job of the working group to consider how the strategies will be funded and to quantify approximately the reduction in gross and net annual greenhouse gas emissions in which implementing each of these strategies would result.

According to the State of Maine's Carbon Budget,1 Maine's net carbon emissions are estimated to be 1.2 million metric tons of carbon dioxide equivalents annually – equivalent to the carbon sequestered by 1.6 million acres of U.S. forests in one year.2 That is a relatively small amount of emissions compared to the potential to reduce emissions and draw down atmospheric carbon through societal changes, technological innovations, clean energy and transportation investments, and natural climate solutions, which hold the potential to bring our net emissions to zero. We believe that the Working Group should propose strategies that would result in the maximum achievable carbon mitigation between now and 2050, and not simply the target of carbon neutrality by 2045. With that in mind, we responded to the three questions you posed below.

Which strategies seem particularly promising to you?

Strategy 1.a.

Investments in conservation easements and fee acquisitions are much needed across Maine to protect the state's natural resources and cultural traditions on a landscape scale. Conservation lands are important for social and ecological reasons and are the foundation of Maine's tourism and recreation-based economies, yet just 20.4% of Maine's land is under conservation (9% of which is state-owned) compared to 27.2% in other New England states. To best implement this strategy, we encourage reinvestment in the Land for Maine's Future (LMF) program, which has run out of money. Since 1987, LMF has supported over 300 projects in all 16 counties to fund working waterfronts, working farmland, and conservation projects alike. LMF leverages federal and private matching grants for land conservation and provides municipalities, land trusts, and state agencies with the predictable funding needed to make many projects successful. Additionally, State Parks have a $50 million maintenance backlog that includes facilities that have not been updated in 40 years. Other U.S. states are implementing new and different facilities and features on their public land to attract visitors, and Maine needs to stay competitive to meet the expectations of visitors and residents. Both LMF and State Parks also require adequate staffing to administer their respective programs and ensure public lands are safe and well-run. We encourage the Working Group to support $75 million in bond funding for LMF and a $20 million bond issue for Maine State Parks, per the recommendations of the Maine Land Conservation Task Force last year.

Strategy 1.b.

We strongly support conserving areas of exceptional biodiversity, as described in this strategy. Climate change is increasing risks for more than one-third of the species evaluated in a vulnerability analysis developed with input from more than 100 scientists. More specifically, according to the National Audubon Society, Maine could lose half its bird species to climate change. We face a severe risk of habitat loss, habitat degradation, and changing habitats that no longer support scores of native Maine species. Protecting Maine's strongholds for biodiversity will increase resilience to climate change, provide critical habitat for wildlife that live in and migrate through Maine, and maintain the life-sustaining goods and services society relies on from natural ecosystems.

Strategy 4.a.ii.

Expanding the state's ecological reserve system would help ensure that portions of Maine's unique natural landscape and ecosystem types remain intact, protecting wildlife, providing education and long-term ecological research opportunities, and building resilience in the face of climate change. Several of Maine's treasured places, like Bigelow Preserve and Mahoosuc Public Reserve Land, are protected under the state's ecological reserve system. Right now, a statutory limitation caps the ecological reserve system at 100,000 acres (it currently

encompassed over 90,000 acres) or 15% of land under the jurisdiction of the Bureau of Parks and Lands. This arbitrary cap is preventing important conservation from being realized, and we recommend amending the statue to remove the cap.

What is missing?

Addition to Strategy 2.c.

The Working Group proposed a forest carbon program for landowners with 10 to 5,000 acres but not for large landowners. We would like to understand why voluntary participation by large landowners was not considered for the program. Large landholdings make up most of the privately held land in the 10.4 million acres of Maine's unorganized townships and excluding them would mean significantly less land available to meet greenhouse gas reduction targets. Large landowners are more likely to actively manage their land and cut aggressively, presenting an opportunity to modify forest management practices to increase stocking and sequester large amounts of carbon in the near-term. We are interested in the rationale behind focusing on small landowners, especially ones with as few as 10 acres.

Addition to Strategy 4

Maine is the most forested state in the country and therefore has a unique opportunity to employ natural climate solutions to sequester carbon on a large scale. However, progress toward increasing stocking is hamstrung by weak regulation and economic demands that drive businesses to cut more than what is scientifically considered good forestry. We recommend that the Working Group look at Outcome-Based Forestry (OBF), overseen by the Maine Forest Service, as a program that could be updated and leveraged to address climate change and resilience. For example, there would be climate benefits if land managers followed stocking guides.6 This would promote good silviculture that increases stocking, reduces overharvest, and improves the quality of forests. Over 2.9 million acres of forestland are currently enrolled in the program and harvest levels could be maintained while stocking increased, as has been shown to be possible through case studies by the New England Forestry Foundation. Increasing stocking to sequester more carbon would not alter the intent of OBF. In fact, it would lead to better results for forest health and climate change and enable landowners to better meet the sustainability goals of the program, which are:

A. Soil productivity;

B. Water quality, wetlands and riparian zones;

C. Timber supply and quality;

D. Aesthetic impacts of timber harvesting;

E. Biological diversity; and

F. Public accountability.

Addition to 4.e.

Rivers, streams, riparian buffers, wetlands, lakes and ponds all are profoundly threatened by climate change, while conservation and restoration efforts have great value for access to habitat and adaption as the climate changes. We recommend creating a dedicated, sustained funding source to conserve and restore aquatic connectivity to enhance climate adaptation and resilience, support migratory and resident aquatic species, and reduce the spread of invasive aquatic species. To do so, we request that the Working Group recommend that the State:

• Adopt a statewide policy to support the restoration of native migratory and resident fish species and improve aquatic connectivity.

• Restore areas with exceptional biodiversity and potential for the restoration of aquatic connectivity, as informed by documentation of historical presence, barrier prioritization tools, state watershed management plans, as well as Beginning with Habitat Focal Areas and other conservation planning tools from the Maine Department of Agriculture, Conservation and Forestry's Maine Natural Areas Program and the Maine Department of Inland Fisheries and Wildlife.

• Create incentives to improve the aquatic connectivity at private and publicly owned barriers (dams and road culverts) to achieve safe, timely and effective fish passage; reduce the potential for flood damage; improve water quality; remove obsolete barriers and restore natural riverine processes.

• Provide technical assistance to dam owners including towns, individuals, and corporations to improve aquatic connectivity, reduce the potential for climate-change related flooding, and improve habitat for native species.

Addition to 5.c.

There is a significant opportunity to invest in substituting wood for other construction materials that require more fossil fuels to be produced, which has not been given much attention by the Working Group. This would not only have carbon sequestration benefits but could also have jobs benefits and drive innovation at Maine-based colleges and universities.

Do any of these strategies concern you, and if so, why?

Strategy 2.a.

We conditionally support the concept of a voluntary incentive-based Maine forest carbon program, but we are concerned that the program might not provide verifiable reductions in carbon in the atmosphere without more rigorous requirements that ensure additionality and avoid leakage. While we believe there could be merits to a forest carbon program and it should continue to be considered, reducing reliance on fossil fuels and advancing clean energy in the state are bigger priorities.

Forest soils and biomass are the largest natural carbon sink in Maine. Given the huge role forests play in sequestering carbon and that Maine forests are understocked, the forest carbon program concept has potential, but in order to be successful, the program needs to be scientifically rigorous in design. The challenge of incentive programs that are based on participation not outcomes is ensuring that the desired results are achieved without externalities or loopholes. There are many details and specifications that go into a well-functioning carbon sequestration program that have been described in detail by other states with developed carbon offset programs, like California, but there are two aspects of a voluntary, incentives-based program that we are concerned with in particular. First, the program would need to require state-wide harvest levels be maintained to avoid "leakage", or displacing timber harvest in Maine to elsewhere in the world. Second, it must only reward landowners that go above and beyond status quo forest management and seek to increase stocking, sequestering more carbon. Actively managing a forest to increase stocking can improve wildlife habitat and enhance forest health. Instead of having to harvest or develop a property to afford to keep the land, offering incentives for woodland owners to manage their forests according to scientific forestry principles can help prevent poor management, increase stocking, and sequester carbon over the long-term.

If such a program is pursued, we realize funding mechanisms will have to be evaluated. Maine may consider engaging corporations interested in offsetting their carbon emissions to meet their own greenhouse gas reduction targets because of regulatory requirements or for corporate social responsibility reasons. It's especially important to keep in mind that offset programs may reduce atmospheric carbon, but they cannot result in the removal of other noxious pollutants that are released from burning fossil fuels and they do not encourage companies to make their operations more efficient or switch to clean energy sources. Carbon offset programs, if poorly designed or inadequately enforced, can be an excuse for companies to continue business-as-usual, which is hugely problematic. We do not believe those are reasons to abandon the idea, but they should be weighed carefully.

Strategy 2.e.

We support this strategy, but we are concerned because it is the only mention of rivers and aquatic resources in the entire list. More attention could be paid to the value of riparian forests and their role in sequestering carbon, maintaining healthy aquatic habitat, and improving habitat resilience.

Again, we greatly appreciate the collaboration, thought, and expertise that went into crafting the Working Group's five recommendations, which we support with the qualification that more can be done. Considering the magnitude and extent of climate change, we urge the Working Group to think bolder and more creatively about its strategies to benefit Maine and advance climate change mitigation efforts as a whole. For the strategies to be feasible, we also encourage the Working Group to consider how each strategy will be funded and to approximate the greenhouse gas emission reductions that would result from implementing each of the strategies. We are encouraged by the momentum behind the Maine Climate Council, its working groups, and the Mills Administration's commitment to climate action. We ask that you seize the moment to make lasting change and fully capitalize on the potential for our natural and working lands to sequester more carbon, emit fewer greenhouse gases, and increase resilience.

75 **Janet Lynch** jllynch@gwi.net

My name is Janet Lynch, and I am a proud citizen of Maine and landowner in Pownal. The issue of climate change is unfortunately upon us, and it is imperative that we as a state and as a nation take immediate and decisive action to mitigate its effects. In view of these solemn facts, I respectfully submit the following urgent comments on the Maine Climate Council's draft climate mitigation and adaptation strategies relevant to Maine's forestry and agriculture sectors, and natural resource conservation in our state.

1. IT IS IMPERATIVE TO UNDERSTAND AND PRESERVE HEALTHY FUNCTIONING FOREST ECOSYSTEMS

As the most forested state in the contiguous United States, Maine has a special responsibility to protect our state's forests and to encourage their protection, as forests are absolutely essential carbon sinks, converting billions of pounds of CO2 into oxygen. It is no exaggeration to say that without large areas of healthy forests and strong measures to protect them, our state, our nation and our world cannot hope to mitigate the worst effects of catastrophic climate change. Healthy forests also provide habitat for countless species and protect the land from erosion. Additionally, forests create their own moderate, more humid micro-climates than found in non-forested areas, protecting our state and region from climate extremes and indeed from the risk of out-of-control fires. Disturbed forests, on the other hand, which have a lot of undergrowth and which are drier than healthy, undisturbed forests, are at greater risk of fire.

Scientists have learned much about the functional ecology of forests in recent decades. While previously forests were considered little more than an aggregate of timber waiting to be harvested, and little understanding of the complex forest as a functioning ecosystem which is far greater and more complex than the simple sum of its parts. Of course, it has been long understood that forests provide habitat for various species of animals, but even this understanding was too often limited to those species which were of commercial interest to humans. This is an insufficient understanding of forest ecology, for forests depend on the interdependent working of countless species to be healthy and productive. And again, it is IMPERATIVE to preserve and protect healthy forest ecosystems to prevent the worst effects of catastrophic anthropogenic climate change.

As just one example, it is now understood that the massive networks of various species of fungi within forests connect the trees, condition and bind forest soils to prevent erosion, and ensure forest humidity, to name just a few of their essential functions. These fungal networks within forests also serve as massive carbon sinks themselves. To sustainably manage forests, it is absolutely essential that managers and foresters fundamentally understand how these fungal networks work and how essential they are, for if too many trees are removed and

soils disturbed, the fungal networks die, and with them many trees and the forest ecosystem itself dies or is severely impaired.

On a practical level, this means that simply going into a forest and "thinning" trees - if such "thinning" results in disturbing the fungal networks so that they cannot properly function, dries out the forest, reducing its productivity and increasing the risk of fire - is not sustainable. I agree with the recommendations in Draft Strategy #2 that the use of "high-quality on-the-ground performance by loggers" and "low-impact timber harvesting equipment" should be encouraged, but these measures are insufficient if loggers and managers use these tools and strategies without a deep understanding of the importance of maintaining the integrity of forest ecosystems and fungal networks with the goal of keeping forests as shaded and as humid as possible.

While it is true that trees, like all plants, need sunlight to grow, this idea has to date been over-emphasized, while there has been too little focus on the importance of shade and humidity in healthy forests so that they can function as valuable carbon sinks, wildlife habitats and as protection from erosion. In certain areas of the state which have been aggressively logged, erosion has taken its toll on watercourses and large swaths of healthy forests have been lost. These areas serve as warnings of how not to continue forestry practices into the 21st century.

2. VIEW AND MANAGE HEALTHY, FUNCTIONING INTACT FOREST ECOSYSTEMS AS VALUABLE ECONOMIC ASSETS IN THEMSELVES, AS OPPOSED TO VIEWING THEM SIMPLY AS SOURCES OF NATURAL RESOURCES TO BE EXTRACTED.

I understand that the Maine's history, and indeed the history of many more rural states is based in resource extraction, but as a society must pivot to understand and promote the economic, as well as the ecological, cultural and climatic value of healthy, intact forests. Certainly, the economic model of aggressive logging as a primary engine of economic growth in the most heavily forested areas of the state is simply not sustainable moving forward, even from a raw economic perspective. While traditional forestry is a significant employer and economic engine in many parts of Maine, we must also pivot to an economic model which is based on preservation, rather than destruction of forests. As a state and as a society, we must view intact forests as the economic assets they are, and we must understand that preserving forest ecosystems provides direct economic benefits which often outweigh whatever economic gain could be had from logging and development. I note that nationwide, recreational areas and national parks, protected outdoor spaces, including Maine's state parks, Acadia National Park and the Katahdin Woods and Waters National Monument, drive the outdoor recreation economy which supports 7.6 million jobs and generates $887 billion in consumer spending each year.

Mainers frankly deserve better than relying on forest destruction and polluting pulp and paper mills to fuel our economy, and we can and should view our intact forests as economic engines as we look ahead to making our state's economy work for all Mainers into the 21st century. Many paper mills are shut and aren't going to come back on line, but that doesn't mean that communities in those areas of Maine are doomed - far from it. In addition to being heavily forested, Maine is also within reasonable driving distance of major metropolitan centers, and there are major opportunities for economic growth in rural, forested areas of the state by investing in the outdoor recreation economy there. While the current coronavirus outbreak has devastated tourism worldwide, we must look to the future, and realize that the public's appetite for outdoor recreation pursuits continues to grow. Anyone who doubts the enormous economic value of this sector need only look at the success of L.L. Bean in catering to this market. Other examples in our state abound, from the Moosehead region to Acadia and beyond. Even now, with tourism virtually impossible, people are still buying outdoor equipment to enjoy Maine's great outdoors. This is a bright spot in both economic development and in forest protection and climate change mitigation.

3. CREATING TAX AND OTHER FINANCIAL INCENTIVES TO BOTH LANDOWNERS AND TOWNS AND MUNICIPALITIES TO PROTECT AND PRESERVE MAINE'S FORESTS

I agree with the Draft Strategies #2 to "create new and update existing financial incentives and support for private land management and infrastructure that supports climate mitigation and adaptation". However, to item b. under this heading, "Address land taxation policy through legislation introduced by the Governor…" I would strongly suggest and support adding language which specifically and meaningfully compensates local communities to incentivize the protection and preservation of forests and farmland, wildlife habitat, and other open space.

Generally, in Maine and throughout the U.S., municipalities are under a great burden to fund essential services including schools, road maintenance, and fire and police protection with local property tax revenues. This creates a pernicious incentive for local communities to allow (and in some cases even encourage) environmentally disruptive development which is not in the communities' best interest in order to enlarge those communities' tax bases.

Planners, legislators and the Governor should understand that the United States is virtually unique in the developed world in its practice of relying primarily on local property taxes to fund essential municipal government services. For example, in Ireland, real estate taxes are paid only upon transfer of real property, and local government services are paid by all county residents through a council tax, as well as through national funds. Throughout western democracies, essential local government services are funded more equitably than they are here in the United States, because local property taxes are not relied on so heavily, if at all, to fund these services. It is high time that we in the U.S. reconsidered our heavy reliance on local property taxes to fund essential government services. Unfortunately, the local property tax system Maine currently creates incentives for communities to allow environmentally dangerous development, while it also virtually ensures vast inequity among school districts.

Maine alone probably cannot entirely change our reliance on the antiquated fiscal model of heavy dependence on local property taxes to fund most essential government services, but we can and must take decisive action to encourage both towns and landowners to preserve forests and open spaces by removing fiscal disincentives to doing so and financially supporting towns to this end. If we are going to be serious about preserving land for all Mainers to protect our state's climate, environment and economy, we as a state must find ways to financially help towns fund their essential services and offset property tax revenues, as we encourage towns to incentivize the protection of environmental resources through reduced tax rates for landowners who do so. Maine should live up to its motto of "Dirigo" and lead by example in developing more enlightened, equitable tax policy for the 21st century, while preserving our precious natural resources for current and future generations.

I feel strongly that this issue must be addressed as part of a broader strategy to provide strong incentives to both landowners and towns to protect valuable environmental resources, rather than putting towns in an impossible position where they feel like they need to prostitute themselves by allowing environmentally inappropriate development in a desperate attempt to raise revenue. We must protect our natural resources to protect them for future generations and to mitigate and slow the dangerous effects of climate change, and because land use decisions are largely made at the local level, the state simply must step in and help to amend the current dysfunctional local property tax system to create solid incentives to towns to support landowners who do the right thing by acting to protect our precious environmental resources.

4. IMPROVING EFFORTS TO FIGHT INVASIVE FOREST PESTS

Regarding Draft Strategy #3 to "Provide Technical Assistance on natural climate solutions to landowners and producers", and as a landowner who is gravely concerned about threats from invasive pests, especially EAB (emerald ash borer) and ALB (Asian long-horned beetle) I would like to see special attention placed on item 3. c. regarding increasing technical assistance to face the threats of invasive species. The state's forestry office and entomologists are doing excellent work and are tireless in their efforts, but in my view they need more staff and resources, as the threats posed by these destructive invasive forest pests are grave, huge and unprecedented, and our state's forested areas are vast. I fear that EAB for example may be spreading un-detected in some areas, because there is not sufficient monitoring and awareness, despite the state's valiant efforts to combat these pests.

Put simply, we desperately need more boots on the ground in the fight against invasive forest pests, and more resources into researching environmentally friendly and effective mitigation strategies. At minimum, much broader and more robust public education campaigns about these destructive pests are urgently required, as well as more aggressive enforcement against the movement of firewood, with substantial fines levied. I'd like to see law enforcement have the right to pull over out-of-state vehicles seen to be hauling firewood and ticket them for the offense, and I'd like to see campgrounds enforce rules against bringing in firewood, refusing admission to those who fail to comply, and requiring guests to leave who fail to comply, as just a few examples of urgently

needed anti-invasive species measures that I'd like to see implemented. Invasive forest pests are a very serious and growing problem and Maine must devote more resources to it.

5. COMMENTS ON DRAFT STRATEGIES #4 AND #5, CLIMATE MITIGATION AND RESILIENCE AND RESEARCH AND DEVELOPMENT STRATEGIES

Regarding Draft Strategy #4, "Update and refocus state programs and policies to address climate mitigation and resilience", I strongly support efforts to "continue and enhance climate-friendly public land management practices" (Draft Strategy 4. a.)

I would like to know more about Draft Strategy 4. b. to "[u]pdate existing policy and staffing needs to support comprehensive, accurate and timely environmental review and permitting of projects under existing environmental regulations, thereby ensuring smart development and appropriate renewable energy project siting." In my view this particular draft strategy is vaguely worded, and leaves definitions of key words and phrases, such as "smart development" and "appropriate renewable energy project siting" up to interpretation. One person's "smart development" may be another's environmentally destructive project. I strongly support stringent environmental review of all proposed developments, even putatively environmentally beneficial ones, by requiring both on-site and state-wide and region-wide knock-on effects, for examples. Claimed benefits of proposed projects must be carefully and objectively reviewed in light of potential effects of a proposed project, such as for example a project's potential to reduce forest acreage and thus to impair carbon sequestration capacity.

Regarding renewable energy project siting, I strongly believe that there should be greater efforts to specifically encourage locally-generated solar power, especially micro-grid projects in which power is generated and consumed close to the source (thus minimizing power losses and reducing the risk of power outages, two major problems with long-distance electricity transmission), while employing Maine people and companies.

Regarding Draft Strategy #4 items c. and d., I am deeply concerned about the language about encouraging "greater state coordination to reconcile competing land uses and promote efficiency, including streamlined renewable energy development review and permitting with rigorous natural resource standards." While "rigorous natural resource standards" sounds reassuring, it is unclear from this document exactly what these standards are, and the phrase "streamlined renewable energy development review and permitting" would seem to undercut to goal of maintaining "rigorous natural resource standards." Without knowing how the authors of the Draft Strategies define "renewable energy development" - which could be anything from a small solar micro-grid project in a hayfield to a massive, environmentally disruptive, highly controversial power transmission line through large swaths of the state's forests - it is impossible to evaluate this item, but I read phrases like "promote efficiency" and "streamlined review" with great suspicion, as they are often misused by promoters of potentially environmentally destructive projects who wish to evade thorough and necessary environmental review.

Draft Strategy #4 item d., "Reduce CO2 emissions from fossil fuels used for building heat/power by encouraging the installation of modern wood heat/power technology in homes, businesses, schools, hospitals and other institutions" is also of concern, and it should be deleted or at least substantially amended. CO2 emissions are CO2 emissions, and they have similar deleterious effects on the climate, whether they are generated by burning fossil fuels or wood products. Therefore, this item is based on a misleading premise. While there may be benefits to the local Maine economy by promoting wood fuels over fossil fuels, these benefits must be weighed against creating incentives to disrupt forest ecosystems by increasing logging for the purpose of creating wood fuels, which in turn threatens to reduce Maine forests' ability to sequester carbon from the atmosphere.

It is a fallacy to believe that carbon emissions can be reduced by burning one fuel over another. The burning of fuels, whether fossil fuels or wood fuels, creates CO2 emissions. Logging exacerbates carbon emissions by disrupting forests' ability to act as carbon sinks. The argument that these losses are offset because the timber industry replants the trees it fells also does not hold water, because mature, healthy forests sequester far more carbon per acre than do recently logged forests with young, replanted trees and disturbed soils. In fact, it takes many decades to return a disturbed, logged forest to optimal carbon sequestration functionality, and usually the

forestry industry does not wait long enough to ensure that this happens before forests are revisited by logging equipment. (In this regard, please also see Items 1 and 2 of these comments, on pages 1 to 2, above.)

For similar reasons, I have major concerns about Draft Strategy #5, item 3, which recommends an "executive order to use Mass Timber (including Cross Laminated Timber - CLT) building technologies, and to encourage related manufacturing facilities to locate in Maine." While I understand the importance of the forest products industry to Maine's economy, I would want to know much more about what exactly what the "Mass Timber" referred to in this item is, and I would like to see a detailed environmental review of any such proposed manufacturing facility which takes into account environmental impacts of such a facility, including but not limited to impacts on carbon sequestration, as well as habitats and recreation. Again, as a state, we must also remember that intact forests also have major economic value, and we should make robust investments in the burgeoning industries which rely on them.

Again, I wish to thank you and your colleagues on the State of Maine Natural and Working Lands Working Group for the opportunity to comment on urgently needed updates to Maine's Climate Action Plan. As you can see, these issues are of great importance to me as a citizen of Maine, and I spent much time and thought in formulating them, although I will be the first to admit that they are far from comprehensive. Still, I sincerely hope that they will be of use as you revise and edit the Draft Strategies for updates to Maine's Climate Action Plan.

76 **Denison Gallaudet** denny.gallaudet@gmail.com

Scope of work should limit use of carbon incentives/offsets to achieve carbon neutrality

The draft scope of work states that the NWL should create "incentives for different levels of forest landownership to capture carbon" and "explore new opportunities to support increased resiliency and carbon sequestration" for agriculture.

PL476 - An Act to Promote Clean Energy Jobs and To Establish the Maine Climate Council - states that "By January 1, 2050, the State shall reduce gross greenhouse gas emissions to at least 80% below the 1990 gross annual greenhouse gas emission level." Gross GHG emissions were 21.23 MMTCO2e so must be reduced outright to 4.24 MMTCO2e. Neither forest or agricultural carbon sequestration can be counted as part of the 80% reduction.

Governor Mills 2019 Executive Order - To Strengthen Maine's Economy and Achieve Carbon Neutrality - states that "Maine shall strive to achieve a carbon neutral economy no later than 2045." The Governor's Office of Policy Innovation and the Future via the Climate Council shall among other duties "coordinate the advancement of policies to advance the sequestration of carbon emissions."

While not explicit, it seems obvious that the Climate Council will be considering natural systems such as forest and agricultural carbon sequestration to bring the remaining 20% of emissions to zero, pursuant to the Executive Order. The Order specifically references "carbon sequestration through the state's natural resources."

If this is the case, then the NWL strategies should explicitly so state.

Getting to zero could be achieved in whole or in part through crediting forest or agricultural carbon offsets. But these offsets cannot be an accounting fig leaf to achieve carbon neutrality on paper. They must have substance. In Sierra Club Maine's view, they must be: 1. additional, 2. permanent, 3. verifiable, 4. certified by independent review, 5. enforceable.

An example of offsets with substance would be those developed under the RGGI Improved Forest Management Protocol.

In addition, it is Sierra Club Maine's view that the use of carbon offsets to get to zero should be limited. The draft strategies are silent on what portion of the remaining 20% to achieve carbon neutrality can be defrayed by carbon offsets. Sierra Club Maine recommends that this portion should be limited to not more that 10% of gross GHG emissions.

In addition to being sensible policy, a 10% limitation has a material impact on the scale and reach of the strategies themselves.

For example, a 10% limit would result in the need for 2.1 MMCO2e in offsets annually. This represents approximately 15% of the current level of carbon sequestration from Maine's forest lands as shown in the State of Maine's Carbon Budget Version 1.0. Such a modest percentage would not materially effect the supply of wood products nor would it result in much if any risk of leakage.

In fact, if devoted entirely to carbon sequestration and not harvested, the roughly 800,000 of Maine's public lands could generate the lion's share of such offsets. Such offsets could be auctioned off as needed to emitters for whom carbon-free alternatives are limited such as paper mills or lobstermen.

Strategy 1 is critically important. While blessed with abundant fields and forests, in comparison to many other states a very small percentage is owned or controlled by the people of Maine. In addition to multiple environmental co-benefits, conserved lands help Maine mitigate climate change. Land in private hands can at the discretion of the owner be changed to uses such as development so that such benefits can be lost, perhaps permanently. As more lands come under public ownership or become subject to easements, their role in sequestering carbon can supplement the importance of public lands in achieving Maine's goal of carbon neutrality by 2045.

Funding for Strategy 2a should be market based and not fall on Maine taxpayers. Developing a voluntary incentive-based program forest carbon program for small woodland owners is a laudable objective. Current carbon programs have been in existence for a number of years and appear to be functioning well. However, such programs like the cap and trade system of the California Air Resources Board are complex, costly to put together and favor landowners who own 3,000 or more acres. Several such landowners in Maine have already developed programs for the California compliance market such as the Passamaquoddy Tribe and the Nature Conservancy. Access to programs does not appear to be an issue for larger Maine landowners.

However, due to cost and complexity, access has proven to be a stumbling block to small landowners – estimated to own approximately 40% of Maine's forest land. Strategy 2a will hopefully find approaches to reduce these barriers to access. Such approaches should have the same substantive features as those mentioned above for carbon offsets generally.

In Sierra Club Maine's view, funding for incentives and cost sharing of such programs should not fall directly on Maine taxpayers via appropriations from the General Fund. First, such appropriations could crowd out other crucial programs such as Tree Growth. Second, the carbon sequestration benefits of this program would only indirectly be paid for by the emitters of carbon pollution. Third, this source of funding would not be progressive but regressive in proportion to its reliance on the sales and other regressive taxes and fees imposed by the state. Lastly, the incentives would be established by regulatory rule making and not fully responsive to changes in the cost of carbon pollution.

A better approach would be to rely on the well-developed cap and trade structures to fund negative (acid rain) and positive (carbon offsets) externalities. These structures permit market forces to help find the efficient balance between supply and demand. By way of example, one possible source for landowner payments could be sale of Renewable Energy Credits (RECs) to electricity suppliers under Maine's Renewable Portfolio Standard.

Under Maine's deregulated system, CMP and Emera provide only distribution services for electricity. Electric power is supplied by various suppliers such as Nextera in a competitive market. In order to sell electric power in Maine each supplier must annually certify to the PUC that its electricity meets the RPS standard. Currently this is 40% and will be increasing to 80% by 2030. Almost all of this requirement is met by the suppliers purchasing RECs from generators of renewable electricity. The generators must gain prior PUC approval in order to sell their RECs. Generators range from hydro to wind farms to biomass; the lion's share of the latter are Maine's paper mills. A REC equals 1 MWh and sold for an average price of $16.04 in 2017 (the latest year reported by the PUC).

Last year the Legislature approved the use of thermal REC's for compliance with RPS. These would available for sale by CHP and similarly efficient operations using a conversion rate from BTU's to MWh. The idea is that while not electricity per se, a thermal REC would offset the CO2 emissions from fossil fuel electric generators.

Sequestered carbon from improved forest management likewise offsets the CO2 emissions from fossil fuel electric generators - thus, forest carbon RECs. Under the proposed Maine Carbon Management Program, after applying a 25% buffer for unintentional reversals and leakage, a forest carbon REC could be assumed to sequester 0.75 MTCO2e.

Almost all fossil fuel generated electricity sold in Maine comes from natural gas fired plants. These emit around 0.5 MTCO2e per MWh. A forest carbon REC would thus offset .75/.5 = 1.5 MWH for a notional value of $16 x 1.5 = $24. This is of course quite a bit higher than the compliance and voluntary markets for carbon offsets so there would be a margin for a greater buffer, etc.

The advantage of a forest carbon REC is that 1) it parallels the already approved thermal REC program, 2) would not carry a direct fiscal note as does Tree Growth, 3) is progressive as the cost falls on rate payers whose usage generally rises with ability to pay and 4) is subject to market forces for price discovery.

Strategy 4d should require that biomass for heat/power projects be sourced from sustainably managed forests. Sierra Club Maine believes that biomass projects can be sustainable, but that many biomass projects are not. We are not confident that massive new biomass energy resources are available without risking soil and forest health, given the lack of commitment by governments and industry to preservation, restoration, and conservation of natural resources.

All fossil fuels and most biomass technologies aggravate global warming by producing CO2. Unless very carefully managed, biomass operations may not be sustainable and may add to the CO2 problem because of damage to soil health or failure to assure sustainable regrowth of the fuel stock. Biomass is in principle renewable, but native soils hold substantial carbon, mostly in root mass, and while it is possible to preserve soil carbon balances, conventional agricultural practices rarely do so.

Sierra Club Maine would oppose heat/power projects which rely upon ecologically destructive clear-cutting, in-wood chipping where excessive amounts of biomass are removed from the land, and conversions to non-native species which undermine native biodiversity. We oppose biomass energy production on any land which relies upon logging activities that are unsustainable, or that jeopardize fully functioning forest ecosystems.

77 **Ed Meadows** avocet2014@yahoo.com

The strategies for working lands and natural lands look good. Question: they suggest a dedicated funding source be established. When will that be done?

The Climate Council may want to review the recommendations of the Northern Forest Lands Council (NFLC). There were recommendations for supporting forestry and natural resource industries that might not have been adopted at the time but could be beneficial. You may know it was the NFLC work that resulted in the Forest Legacy Program. There may be a copy of the report in the Commissioner's office. Or, Don Mansius would have one.

78 **Lee Burnett** forestworksme@gmail.com

We are deeply grateful for your search for efficient and effective forestry tools for mitigating climate change. We applaud your multi-scope approach, including “expanding markets for wood products.” As you know, carbon continues to be stored in long-lived products, such as building products and furniture.

New England, and Maine in particular, is starting to see the emergence of a constellation of wood producers and wood consumers actively working together to maximize the carbon drawdown benefits of new construction, often using off-the-shelf materials. We applaud your recommendation for continued investments in research at the University of Maine to support cross-laminated timber construction and bio-based wood market innovation. We

encourage you to consider the many other ways to support the substitution of natural materials for carbon-intensive building materials.

The Maine brand is already strong in handmade crafts, food, outdoor apparel and vacation destinations. Maine wood could achieve the same brand loyalty, particularly pairing it with forest carbon efforts. The effects would ripple through urban and rural communities alike.

79 **Jeffrey Reardon** Jeffrey.Reardon@tu.org

I am writing to provide Trout Unlimited's (TU's) comments on the Maine Climate Council's Natural and Working Lands Group's Draft Strategies for Mitigation and Adaptation. Trout Unlimited is a conservation organization whose mission is to conserve, protect and restore North America's trout and salmon and their watersheds. We have 6 chapters and over 2,000 members in Maine. Our primary focus in Maine is protection, restoration, and enhancement of intact brook trout, Atlantic salmon, and Arctic charr habitat. Maine is unique in the richness of its coldwater fish habitat. Maine has the nation's only remaining populations of native Atlantic salmon and landlocked Arctic charr. It contains what a 2006 report from the Eastern Brook Joint Venture called "the last true stronghold for Eastern Brook Trout in the eastern United States", with more intact populations and habitat than the other eastern states combined, and more than 90% of all remaining intact lake and pond populations.1

Most of this resource is in the streams, rivers, lakes, and ponds that flow through Maine's working forests. These fish species—and other native fauna that require cold clean water—have all been identified as vulnerable to climate change in the state's most recent State Wildlife Action Plan. Some projections suggest that under even the most favorable assumptions for climate change over the next 80 years, significant amounts of current coldwater habitat in Maine would be no longer be suitable for salmonids or other coldwater species. Under hotter projected scenarios, Maine could lose most of its current coldwater habitat by 2100.2 Most other eastern states lose all of their coldwater habitat, so Maine is essential to a national strategy that maintains at least some suitable coldwater habitat for brook trout, endangered Atlantic salmon, and Arctic charr. Because so much of Maine's current coldwater habitat is on working lands—including nearly all the watersheds anticipated to be most resilient to climate change--your group's recommendations are critical.

As we understand your mandate, it is to evaluate and recommend short- and long-term strategies that will both reduce greenhouse gas emissions and make natural, forest and agricultural lands more resilient to the climate change that we know will occur despite best efforts. TU's foremost and over-arching comment is that your draft strategies contain relatively few measures that are explicitly directed towards protecting Maine's most resilient aquatic resources and increasing the resiliency of vulnerable ones. A notable exception is the call for increased funding to implement Stream-Smart practices for bridges and culverts, which we strongly support. However, we believe there are other opportunities, consistent with the broad outline of your five Draft Strategies, to be proactive in protecting resilient aquatic habitat and increasing resilience of vulnerable habitat. Here are some specific suggestions, tied to several of your five Draft Strategies.

Draft Strategy #1: Create a dedicated, sustained funding source to conserve working forest, agricultural, and natural lands to increase carbon storage opportunities, avoid future emissions, and enhance climate adaptation and resilience.

• We suggest two broad changes here.

o First, be explicit that in selecting land for conservation, priority be given to conserving natural lands that include habitats that have been identified as resilient to climate change, including aquatic habitats. Through monitoring and modeling, the most resilient lakes, streams, and watersheds can be identified, largely based on two factors—modeling of predicted resistance to water temperature increases and monitoring of aquatic passage barriers. For coldwater fish, the most resilient habitats will be resistant to temperature change and have relatively few barriers to movement of aquatic fauna to seek out seasonal thermal refugia and other critical habitats. Several tools are available to identify and prioritize resilient aquatic habitats. We commonly use two: A Brook Trout Occupancy

model developed for use by the Eastern Brook Trout Joint Venture, and Trout Unlimited's Conservation Portfolio assessment of brook trout in Maine.

o Second, think about including management measures on protected forest, farm, and conservation lands that are intended to increase carbon storage and/or enhance resilience to climate change. Broadly, these include farming and forestry practices to keep carbon stored in soils and/or to enhance habitat suitability and climate resilience for the most vulnerable aquatic species. For

https://link.springer.com/content/pdf/10.1007/s11027-012-9385-3.pdf

aquatic habitats, in addition to maintaining fish passage via Stream Smart road infrastructure, we believe that enhanced protection of riparian buffers, and active measures to enhance large wood recruitment into aquatic habitats will have multiple benefits. This concept and its rationale are discussed in more detail at the end of this letter.

Draft Strategy #2: Create new and update existing financial incentives and support for private land management and infrastructure that supports climate mitigation and adaptation.

• As already noted, we strongly support the inclusion of incentives for Stream Smart infrastructure. We believe that several other management practices may also have benefits.

o Addressing other barriers to aquatic organism passage, including active dams, abandoned dams, and log-driving infrastructure.

o Identifying and where possible removing thermal barriers—which are often formed by infrastructure that creates shallow, warm impounded areas.

o Replacing natural structure that has been removed from Maine's stream habitats by log driving, largely through "chop and drop" or other large wood additions to stream channels.

o Maintaining riparian forests that moderate impacts of increased temperature and less predictable streams flows. (See discussion below.)

Draft Strategy #3: Provide technical assistance on natural climate solutions to landowners and producers.

• We believe you've got the right strategies here to deliver technical assistance to landowners and producers. We would again suggest being explicit about incorporating technical assistance for addressing aquatic habitats. The USDA-NRCS and the Maine Forest Service, for example, have substantial technical and financial assistance available to landowners for aquatic habitat conservation and restoration.

Draft Strategy #4: Update and refocus state programs and policies to address climate mitigation and resilience.

• No suggested changes.

Draft Strategy #5: Strengthen research and development and monitoring of climate mitigation and adaptation strategies.

• Research, development, and monitoring are just as critical on natural lands as they are for agricultural and forest lands. Several key information needs related to identifying, protecting, and enhancing resilient aquatic habitats include:

o Long-term temperature monitoring in the state's streams, rivers, lakes and o Better mapping/modeling of areas of significant groundwater input that will be critical to sustain cold water habitats.

o Identification of key thermal refuge habitats. Protecting these and eliminating barriers that prevent migration to and from them are critical to good land conservation and land use planning.

Maintaining and improving forested buffers on coldwater habitat is critical to climate resilience. The Maine Department of Inland Fisheries and Wildlife and many other resource agencies have long recommended voluntary riparian buffers that significantly exceed regulatory requirements for areas that will be managed to protect brook trout.3 Similarly, the Maine Atlantic Salmon Commission developed an "Optimal Riparian Buffer" to be used for conservation projects in Atlantic Salmon Habitat.4 Trout Unlimited later worked to apply a similar methodology to determine an optimal buffer for brook trout in higher elevation brook trout streams in western Maine.5 The Maine Natural Areas Program has produced a similar set of recommendations to apply more broadly to multiple fish and wildlife species that rely on riparian corridors.6 Though the specific recommendations of each document vary in some details, all of them emphasize the importance of maintaining a closed or nearly-closed canopy of intact, mature riparian forest to maintain shading for temperature regulation, stream bank stabilization, and organic inputs to stream food webs (leaf and insect fall from overhead vegetation) and physical habitat structure (large woody debris). All call for areas of either no-cut or very limited harvest in riparian corridors to maintain these functions. As coldwater aquatic systems become more stressed by climate change, the riparian forest's ability to maintain habitat suitability becomes more important, particularly with respect to shading that maintains colder water temperatures and large wood inputs that contribute to physical habitat complexity that both reduce water velocities during stormflows and provide physical habitat complexity that maintains deeper pools and overhead cover that become more important during anticipated lower base flows.

In addition, there is growing evidence that riparian forests may be particularly efficient in storing carbon in standing trees, soils, and in wood incorporated in stream channels below the water surface where decomposition is slow. This suggests that riparian forests can both mitigate the impacts of global climate change and be an important mechanism for reducing atmospheric carbon levels. For example, Dybala et al found that "[C]arbon sequestration should be considered a strong co-benefit

3 Maine Department of Inland Fisheries and Wildlife, undated. Forest Management Recommendations for Brook Trout. https://www1.maine.gov/ifw/do cs/brook_trout_factsheet_forestry.pdf

4 Haberstock, A. 2000. Method to Determine Effective Riparian Buffers for Atlantic Salmon Habitat Conservation. Kleinschmidt, Energy and Water Resource Consultants, Pittsfield, ME.

5 Trout Unlimited. 2005. Riparian Buffer and Watershed Management Recommendations for Brook Trout Habitat Conservation. Focus: Mountainous Brook Trout Watersheds of Maine and Northern New Hampshire. Report Prepared for Trout Unlimited, Augusta, Maine, by Kleinschmidt Associates, Pittsfield, Maine.

6 deMaynadier, P., T. Hodgman, and B. Vickery. 2007. Forest Management Recommendations for Maine's Riparian Ecosystems. Technical report submitted to the Maine Department of Inland Fisheries and Wildlife, Bangor, ME.

of riparian restoration" and that riparian forest restoration provides "both immediate carbon sequestration value and long-term ecosystem service returns."7 Protection or restoration of intact riparian forest can therefore be important for both Draft Strategy #1 by increasing carbon storage on Maine's forest and conservation lands and Draft Strategy #2 by making aquatic habitats on these lands more resilient.

We appreciate the opportunity to provide these comments and look forward to working with the Natural and Working Lands Group and the rest of the Maine Climate Council as you complete your work. If copies of any of the documents cited above would be helpful in your work, I would be happy to provide those. I can be reached via email at Jeffrey.reardon@tu.org or by phone at 207 430 8441.

80 **Alice Kelley** akelley@maine.edu

Thank you for the opportunity to comment on the recommendations of your committee. Please note that I am commenting as an individual with a background in geology and archaeology, but not as a University of Maine employee.

The strategies and goals are well-thought out and are promising in their effort to address climate change impacts on the forests, agricultural and natural lands of Maine. However, I suggest that one area is missing from the discussion: archaeological sites.

While undeveloped portions of Maine are seen as "natural" lands, they were once the home of indigenous people who lived lighter on the landscape, and as result, have left little structural remains, other than coastal shell middens, to mark their occupation. Natural lands thus have the potential to contain a rich cultural heritage, as well as conserve the natural history of the state.

I applaud the effort to create a funding source to help conserve areas of "exceptional biodiversity" and suggest that the charge be expanded to conserve natural lands of significant archaeological and cultural heritage. These areas may include coastal shell middens and interior occupation sites along rivers, lakes and marshes, as well as places of spiritual importance to indigenous people. The Maine Historic Preservation Commission records these sites, many of which are listed on the National Register of Historic Places.

Just as conserving areas of exceptional biodiversity preserves important natural resources for the future, conserving areas of significant archaeological importance helps preserve cultural resources. Expansion of the conservation of natural lands to include cultural heritage aligns with the Climate Council's adaptation goals of prioritizing the welfare of Maine citizens -especially the most vulnerable communities. While preservation of archaeological resources is important for all of Maine's citizens, as part of our communal heritage, it is a critically important link to the past for tribal members, one of the State's most marginalized groups of citizens. Maine's colonial and post-colonial heritage is privileged by preservation as built structures and protected as museums and historic sites. The remaining physical pre-European heritage is held in natural lands and excluded from potential preservation. These sites are and will continue to be negatively impacted by climate change through erosion and development.

Preservation of significant cultural sites and the irreplaceable cultural and paleoenvironmental information they hold includes indigenous culture as an important link to the past for current and future generations of Maine citizens.

Alice R. Kelley, Ph.D.
Golden Undergraduate Coordinator, Instructor, School of Earth & Climate Sciences
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81 **Curtis Bohlen** curtis.bohlen@maine.edu

I am writing to provide comments of the Casco Bay Estuary Partnership in response to the widely circulated document "NWL WG stakeholder input survey.pdf". Thank you for this opportunity to comment. As a member of the Coastal and Marine Working Group, I also want to express my thanks for the hard work of all of the working group members.

CBEP is one of 28 National Estuary Programs sponsored by the U.S. Environmental Protection Agency, and the only one in Maine. Our mission is to protect and restore the water quality, and fish and wildlife habitat of the Casco Bay ecosystem, while ensuring compatible human uses of the Bay. We represent a collaborative effort of people and organizations interested in protecting and restoring the Bay, including the private sector, local governments, non-profit organizations, and state and federal agencies. CBEP implements our Comprehensive Conservation and Management Plan (CCMP), the Casco Bay Plan 2016-2021. Climate change, habitat, and water quality are all central to our mission as expressed in the Plan.

I write to raise one main point. The summary materials circulated by the Natural and Working Lands Working Group hardly mention the impact of land management decisions on the waters of the state, yet land management

will have a huge – perhaps dominant – impact on resilience of Maine's waters in the face of climate change. The proposed strategies should be amended to highlight the importance of how we manage our natural and working lands for ensuring resilience of aquatic ecosystems.

Maine's waters, and especially our lakes and coastal bay, are a critical economic asset for the state, supporting not only marine industries like clamming, lobstering and aquaculture, but also the state's recreation and tourism-based economy. If we are to protect the resilience of Maine's economy, we must protect the resilience of Maine's waters.

 Increasing temperatures will warm Maine streams. As streams warm, they approach and even exceed thermal limits for iconic Maine freshwater fish species, such as brook trout.

o The best way to keep the water cool is by protecting riparian forests, so trees can naturally shade our streams and tributaries.

 Increasing temperatures will make our lakes, streams and bays more susceptible to water quality problems triggered by excess nutrients, such as algae blooms, low dissolved oxygen, and fish kills.

o For many waters of the state, the way to avoid future water pollution problems will be to protect and restore wetlands, forests, and riparian areas, which release few nutrients.

o For other waters, the best approach will be to improve management of upstream lands to reduce erosion and nutrient release, for example by facilitating adoption of best management practices that protect water quality.

 Changing precipitation patterns are likely to lead to changes in stream hydrology and geomorphology. We can minimize the impact of climate-induced changes in precipitation on our state's waters by protecting the ability of watersheds to trap, store, and retain water.

o That is possible both by protecting forests, wetlands and riparian areas and also by managing working lands with an eye towards protecting hydrologic functions, for example by minimizing construction of roads, designing roads to minimize channelization of flows at cross-culverts, and adopting other best management practices.

General Recommendation:

Several of the draft strategies are worded broadly. One could claim that protection of water quality is implicitly covered. But a signal is sent by NOT calling out water quality in these strategies. All strategies should be amended to ensure that aquatic ecosystems are understood to be incorporated under such broad terms as "biodiversity value," "resiliency goals,", or "adaptation strategies."

In addition, I suggest the following two specific changes.

Strategy 1: Add a sub paragraph similar to subparagraph b. that calls for protection of lands that are of exceptional value for protection of aquatic ecosystems and water quality, such as wetlands, riparian areas and some upland forests. While many of these areas overlap with areas that may be identified in Maine Natural Areas Program and Maine Department of Inland Fisheries and Wildlife documents, not all do. Besides, the importance of protecting forests and wetlands for of Maine's waters cannot be overstated, and this deserved being called out explicitly.

Strategy 2: Subparagraph e. should be expanded to include best management practices for road design that minimize the impact of road networks on forest hydrology. Issues with road design that influence resilience of aquatic ecosystems are not limited only to road-stream crossing structures.

82 Sharri Venno envplanner@maliseets.com On behalf of Chief Clarissa Sabattis

I submit the following comments on behalf of the Houlton Band of Maliseet Indians as the elected Chief of my Tribal Nation. We are extremely concerned about the lack of attention and focus on freshwater resources at this point in the process of Maine's climate change initiative.

Maliseets are River people. We Maliseets traditionally fish, trap, hunt, and gather in and around the land and waters of the Wolastoq / St John River since time immemorial.

It is in the context of our deep connection to rivers that we respectfully offer these suggestions in response to a request from the Natural and Working Lands workgroup for comments on draft strategies that pertain to forestry, agriculture and natural lands.

It is also in this context that we focus on the first question posed: What's missing?

Our answer: Rivers, lakes and streams.

Maine's Climate Council goal to "foster the value of the State's natural resources and natural resource industries" surely cannot be fully realized without a focus on these ecologically vital, iconic- and for Maliseet people- sacred freshwater resources. We raise this issue with the Natural and Working Lands work group because the intimate chemical, physiological, and ecological connections between land and water makes this Maine Climate Council sector the natural place for freshwater to reside.

Our proposal: fill this gap by retooling to become a Land and Water workgroup and use watersheds as the organizing principle to develop mitigation and adaptation climate change strategies.

Here at the Houlton Band of Maliseet Indians (HBMI) much of our climate change work is directed at restoring ecological health and ecosystem resilience in the Meduxnekeag watershed, a tributary of the Wolastoq/St. John.

To that end, we are addressing historical and ongoing land/water impairments by establishing best management land use practices on tribal land, such as riparian buffers, wetlands protection, conservation plantings, and sustainable forestry. We are also promoting these practices with our local partners at the watershed level. Planting riparian buffers for example helps us mitigate rising air temperature by increasing shade along riverbanks. Riparian buffers also increase ecosystem resilience over time by improving aquatic habitat via deadfalls and woody debris.

Suggested strategies:

1. Invest in and empower Soil and Water Conservation Districts to act as key coordinating entities for collaborative watershed-level actions to enhance Maine's climate change resilience.

Southern Aroostook Soil and Water Conservation District was our first and most important watershed partner in the above described climate change work. Maine's Conservation Districts in partnership with USDA NRCS have been addressing land/water impairments by keeping soil on farms and out of rivers, streams and lakes for many decades. They have strong connections with both local landowners and state environmental and natural resource agency staff and are well positioned to take on a coordinating role.

2. Reorient the geographic divisions of conservation districts and state environmental and natural resource agencies around Maine's watersheds.

This provides a common and appropriate geographical basis for collaboration by state-based partners and place-based communities around implementing climate change strategies and actions relating to ecosystem resilience.

3. Collaborate with the Coastal and Oceans workgroup to address climate change impacts to migratory fish.

A Land and Water workgroup using a watershed approach, could partner with the Coastal and Oceans workgroup to foster the values that rivers bring to coastal waters and oceans through freshwater spawning habitat for

migratory fish. And of course, that value is returned to rivers when migratory fish bring coastal and ocean nutrients into freshwater during their annual return migration.

HBMI has an overarching goal of returning Atlantic salmon and other migratory fish to tribal waters in the Meduxnekeag. To that end we are also enhancing in-stream aquatic habitat and fish passage connectivity throughout the watershed. We know that this goal is imperiled by the changing climate. Habitat structures we install create pools and deepen shallow stream channels that cool the water. Fish passage allows fish to search out coldwater-refugia -especially in tributaries-during hot, dry summer conditions. But many climate change impacts that threaten salmon and other natural resources that our community and cultural practices depend on are beyond our individual reach.

We applaud the State's initiative to create a climate mitigation and adaptation plan. We strongly encourage the Natural and Working Lands workgroup to step into the breach and bring freshwater resources fully into this process

83 **Erin Witham** coordinator@downeastconservationnetwork.org

I am writing to submit information to share with the Natural and Working Lands Working Group (NWLWG) on behalf of the Municipal Budgets and Conservation Collaboration (MBCC). The Municipal Budgets and Conservation Collaboration is a partnership between researchers, municipal leaders, and natural resource protection specialists based in the Downeast region working together to better understand the fiscal impacts of conservation on town budgets across the state of Maine. The work we are doing together strongly relates to the scope of strategies put forth by the NWLWG. While we do not have any direct comments to offer on the draft strategies at this point, we would like to heighten the awareness of the group and hope that as we continue our work that there will be future opportunities for our partnership to inform the process of the NWLWG and the Maine Climate Council as a whole. I have attached a document which outlines the scope of our project and recent project updates to share with the NWLWG.

Don't hesitate to reach out if you have any questions. Thank you.

84 **Ellen Baum** ellenkbaum@gmail.com

First, an introduction. I received my masters of forestry degree from Yale University in 1978, and since then have lived and worked in Maine, including the Maine Forest Service, the Department of Conservation, the Land Use Regulation Project, Maine Audubon Society, the Regulatory Assistance Project, Resource Conservation Services. and the Clean Air Task Force. More recently, while still living in Maine, my work on climate issues extends outside of the State.

I have many friends and colleagues working on Maine's Climate Council, Natural and Working Lands Working Group. I would like to offer these comments. There is nothing in the recommendations that I disagree with; I wish though that the recommendation went farther forest resource in harnessing Maine's forest resource for climate (and economic) benefit. Accordingly, I would ask the recommendations be expanded to:

- Allow all Maine landowners, regardless of the size of their ownership, to qualify for incentives to increase carbon stocking in their forest lands

- Highlight the importance of substituting wood for other more energy-intensive building materials

- Look for ways to tap sources of funding beyond Maine taxpayers to increase stocking in Maine's forests,

- Stretch to capitalize on Maine's potential to contribute to global efforts to reduce emissions by sequestering more carbon than Maine emits and creating the possibility of selling offsets to other states.

Maine is one of the most forested states in the country. Be bold!

85 **Jenni Tilton-Flood** jtiltonflood@me.com

As a Maine resident and mother of two, who also happens to be a dairy farmer, I read the NWL Working Group Draft Strategies with keen interest. As a human who wishes for our Earth to be healthy and for me to be able to feed myself and my family, I felt it necessary to provide comments to the draft strategies put forward.

1) Which strategies seem particularly promising to you?
Strategy 1 appealed strongly to me for its scope and inclusivity of the many productive working lands in our state.

2) What is missing?
OUR FOOD SYSTEM. ANIMAL AGRICULTURE. The two go hand in hand AND our vibrant, diverse animal agriculture is already part of the solution, and dairy in Maine has been in motion for decades as not only providers of sustainable nutrition and economic sustainability for our communities, but has been decreasing emissions and environmental impact for decades:

As of 2007, producing a gallon of milk uses 90 percent less land and 65 percent less water, with a 63 percent smaller carbon footprint than in 1944, thanks to improvements made by dairy farmers in cow comfort, cow health and nutrition, and breeding. (https://www.usdairy.com/news-articles/what-is-the-carbon-footprint-of-a-gallon-of-milk)

And while dairy production as a whole accounts for approximately 2 percent of total U.S. greenhouse gas emissions; by comparison, the largest source of emissions in the country is electricity generation, which produces 31 percent,

(https://www.researchgate.net/publication/256686442_Greenhouse_gas_emissions_from_milk_production_and_consumption_in_the_United_States_A_cradle-to-grave_life_cycle_assessment_circa_2008)

Our animal agriculture in Maine has already played a key role in proactively and productively reducing emissions and climate impact AND it has also been finding more and better ways to solve problems outside of agriculture by being integral to renewable energies (such as RNG, renewable electrical generation, methane digestion, etc…) as well as helping other industries and populations with, and up cycling food waste.

There are boundless opportunities for animal agriculture in Maine to not only realize its potential but to increase and help other sectors recover and discover their own potential at mitigating climate change.

And maybe leveraging, exploring, and encouraging private business to continue its development of partnerships and investment in Maine's animal agriculture as a valuable part of the solution and BETTERMENT of Maine is alluded to in the draft strategies BUT it feels like it is missing. It feels like it was forgotten that Maine's working lands are also the lands that feed our communities.

3) Do any of these strategies concern you, and if so, why?

Strategy #3, specifically 3b, seems extremely limited in scope of service providers as well as purpose and opportunity. Opportunity not just for success and innovation, but with regards to possibilities. I realize that our forested lands are not just an incredibly large percentage of our Maine land as well as an untold potential and key player in our journey to climate change mitigation and neutrality goals BUTI am deeply troubled that more emphasis and promise for our agriculture and animal agriculture was not included. While our forested lands are many, our industry of animal agriculture is the provider of potential and promise to repair our environment WHILE providing our economies and communities with sustainable dependability and nutrition.

Animal agriculture, and more importantly, dairy is an investment of potential and possibility that doesn't just make this Earth healthier, but provides local, quality, nourishment for our people and communities. If we do not include animal agriculture in the strategy accordingly we will be overlooking and incredible, and possibly necessary, solution and path to better…while allowing our food system to be weakened.

86 **Ann Gosline** agosline@gwi.net

I thank the Working Group for its work and for the draft strategies. I strongly support all of them as both important and promising.

I would like to comment on one strategy that I believe should be significantly expanded. While the scope of the Working Group's work includes "creating incentives for different levels of forest ownership to capture carbon," Strategy 2a currently excludes forest landowners who own more than 5,000 acres. As the most forested state in the country with the highest or among the highest percent of forested acres under active management, Maine has a remarkable opportunity directly tied to including all landowners in a Maine forest carbon program. Participation by willing larger forest landowners provides the greatest opportunity to increase carbon sequestration in Maine's forests in the next decades, far greater than a program available only to smaller landowners.

In different circumstances, it might make sense to begin with a smaller program and expand over time. We know, however, that time is of the essence. A Maine forest carbon program should be as expansive as possible. Maine should be a leader in designing an effective, scientifically-based program. Maine should also be a leader in working with other states and public-private partnerships to fund regional programs to meet carbon goals through forest carbon sequestration.

A number of analyses have shown that with proper financial incentives, forest landowners can manage forests to increase carbon storage (and maintain an increased carbon level over time) while maintaining harvest levels. Moreover, this approach to forest management provides a very significant co-benefit of improving wildlife habitat by increasing more mature forest blocks, which are critical to maintaining the remarkable ecological values of Maine's forests. This approach to forest management can simultaneously promote wood-product diversification and ecotourism, supporting Maine's rural livelihoods.

For all these reasons, I urge the Working Group (and ultimately the Climate Council) to endorse a strategy to create effective incentives for carbon storage by large and smaller forest landowners alike.

87 **Fish, Gary** Gary.Fish@maine.gov

I wonder if you might consider adding a section on re-greening suburban and urban areas and brownfields with native trees, shrubs and perennials and management of invasive species where they are preventing or inhibiting natural re-forestation.

88 **David Littell** dlittell@bernsteinshur.com

With apologies for not submitting my thoughts on the Land Conservation Strategies for the Climate Council, I have a few minor but important pinpoint suggestions to what is proposed. The overall direction of the strategies is well conceived and thought out. These are additional suggestions:

1. Carbon sequestration, both mitigation and adaptation on the ground will be linked to implementing sustainable forestry practices. Healthy forests including working forests that are managed sustainably will sequester more carbon when that is added to the management goals of the forest plan. Those forests will also service and provide us with many natural resource services and support thriving (and in some cases recovering) Northern forest ecosystems that represent the most intact forest and aquatic ecologies in the Eastern U.S. Maine has a chance to get it right. Landscape scale conservation of intact forest systems is particularly important.

2. At same time, ensuring maintenance of the many small forest holdings is also important. I commend a more explicit link of any state support or funding, including favorable tree growth tax treatment to implementation and maintenance of sustainable forestry practices. To reach smaller forest ownership, it is probably necessary to recognize not just FSC but also SCI and Master Logger certifications of sustainable practices and support for that work for smaller woodlot owners is important to allow them to make such certifications. While supporting forest landowners ability to implement and manage their holdings sustainably it's also appropriate to increase the exit charges from favorable tree growth tax treatment.

3. California's carbon offset program is parallel to Maine's offset requirements under the RGGI system. But California carbon allowances trade at higher values. There is an opportunity here to leverage that offset value with California program offset funding to provide support for sustainable forestry management in Maine for both forest conservation projects and working forest conservation. That provides an additional funding stream to supplement Maine funding to take advantage of. It also represents an example of favorable linkage between different but complementary regional greenhouse gas programs in the RGGI states and the Western Climate Initiative. In simplistic terms, good forestry practices that favorable climate mitigation and resilience can be an export product that benefits Maine's economy and our environment too.

I have papers and work I've done for other states on the linkage of sustainable forestry and conservation if helpful to the workgroup and happy to provide. That said, I know you have many experts already involved in providing information from the Maine Forest Service, Maine DEP and others so I do not know that that information would be valuable at this point in time.

These comments are mine and not those of any client or my law firm nor my non-profit I am associated with.

89 **Sarah Haggerty** shaggerty@maineaudubon.org

Thank you for the opportunity to provide comments on the draft list of strategies being developed by the Natural and Working Lands Working Group to reduce the impacts of climate change on Maine's residents, communities, industries, and ecosystems. This is a significant undertaking over a short period of time, and the results are impressive. Thank you!

We are generally supportive of all of the draft recommendations you have provided, but at the same time believe several specific recommendations and the overall totality is not as bold as it could or should be in order to address the climate crisis before us or to meet the Governor's climate goals. Also, specific quantitative goals and timetables for meeting those goals seem to be missing, which should be added in the next version. Below we highlight some of the most important strategies from our perspective as a wildlife conservation organization, outline some additional concerns we have, identify places where you could strengthen the recommendations, and offer new recommendations we would like to see added.

One of the most promising strategies identified by this working group is Strategy 1 - funding for the long-term conservation of Maine's natural and working lands to increase carbon storage, enhance climate adaptation and resilience, and protect Maine's biodiversity. This is not a new strategy, as several other stakeholder groups have identified the need for a dedicated source of funding for conserving natural and working lands in the past, along with dedicated funding for protecting water and wildlife, but the climate emphasis is somewhat new and makes an even more compelling case for action on this strategy. These natural and working lands are the keys to Maine's economic, ecological, and climate adaptive future. In particular, the protection of important cold-water stream habitats such as stream headwaters as well as biologically rich or unique areas that are particularly vulnerable to the effects of climate change should be targeted, as well as mature and multi-aged forest stands that can provide critical carbon storage and important habitat into the future.

But protecting land as it stands today is only part of the story; funding is also necessary to restore the land and the natural ecological functions that create a resilient landscape, in order to better withstand the effects of climate change. Revegetating riparian habitats along cold-water streams, restoring stream connections through dam removal and culvert replacements with Stream Smart crossings, and restoring mature and multi-aged forest are all restoration efforts that can significantly reduce the impacts of climate change on the natural lands of Maine.

Such restoration can improve habitat for our native species that are particularly vulnerable to climate change, such as cold-water fish and wildlife of the northern forest. In addition, many of these efforts—revegetation of stream corridors, replacing failing crossings with Stream Smart options—can also protect infrastructure investments and public safety by reducing runoff, flooding, and road failure as annual storms increase in size and frequency. Funding for these restoration efforts will be needed at all levels—for state agencies, municipalities, and private landowners—and could include funds to develop forest management plans to increase carbon storage, funds for

state agencies to provide technical assistance and regulatory oversight, as well as funds for both public and private landowners to implement Stream Smart principles as described in Strategy 2.e.

Leadership in coordinating such significant restoration efforts should be supported at the state level through the creation of a Restoration Coordinator position. Restoration of aquatic systems and climate resilient habitats is a huge undertaking that requires coordination across the landscape as well as across multiple state, local, and federal agencies and private individuals and organizations. Maine Audubon is a member of the Stream Connectivity Working Group—a partnership of 32 state, federal, tribal, and non-governmental organizations working to increase the pace and quality of cooperative stream restoration efforts in Maine—and we understand the value of such critical partnerships and the need for consistent, supported restoration coordination. By coordinating restoration efforts at the state level, greater efficiencies and more significant results can be achieved in a shorter time, and funds can be leveraged for better outcomes across the whole state. Members of the Stream Connectivity Working Group are available as a resource to you as you develop strategies around restoring stream connectivity.

A different kind of coordination is also warranted to reduce fossil fuel consumption through our natural and working lands. By promoting less energy intensive wood products for construction and heating and encouraging the development of renewable energy sources while conserving high quality natural and working lands, we can reduce the impacts of climate change, protect high quality habitats, and support our natural resource-based economy. Maine is a leader in New England in renewable energy generation, but there is more we need to do. Encouraging the development of renewable energy projects in appropriate locations to avoid high quality natural lands and highly productive agricultural lands can reduce fossil fuel consumption, create high quality jobs, and make Maine more self-sufficient.

Below are additional comments on specific proposed strategies:

2.a is of particular interest to us, as we have witnessed first-hand through our Forestry for Maine Birds workshops how many small forest woodland owners are interested in learning more about what they can do to help capture and store carbon on their woodlots. The Maine Forest Service, with its many existing connections with forest landowners through the Forest Stewardship program, the Be Woods Wise Program, District Foresters, and Landowner Outreach program, is a logical place for this new program to be developed and housed. At the same time, there should be another strategy added that is similar to this one that is designed to provide incentives for larger landowners to also enhance carbon storage on their lands. One caveat though – we are not sure the goals for significantly expanding carbon storage in our forests can be met while maintaining the same rate of harvest, particularly in some of the more heavily harvested and younger stands.

2.b.iii and v are also of interest to us. These combined strategies have been previously identified by the Beginning with Habitat Steering Committee as a key need for helping towns and landowners conserve lands important for fish and wildlife, water quality, farming, and forestry, plus climate resilience and mitigation, and should be relatively easy to implement.

2.b.vi should be strengthened not just to maintain the Tree Growth Tax Law, but at some time in the future to enhance it by requiring that more be done to protect biodiversity and store more carbon before being eligible for the public tax benefits.

2.e. As the coordinator for the Stream Smart program in Maine, we appreciate the recommendation to increase funding for private and public road crossing infrastructure. Increased funding is particularly needed for private landowners. Storm waters don't care for ownership boundaries, nor do fish and wildlife attempting to move through their habitats, but few funding opportunities are currently available to support Stream Smart crossings on private land that does not produce food or fiber. As storm size and frequency both increase, we need to fund improvements across the landscape, regardless of ownership.

3.a. After reaching thousands of landowners over the past several years through our Forestry for Maine Birds program, we are acutely aware of the importance of having foresters that are knowledgeable about how to

manage forests in ways that enhance wildlife habitat, structural diversity, and carbon storage all at the same time, interact with landowners. Connecting with a knowledgeable professional is vitally important to and resonates with many landowners. Providing additional support to landowners for this work would be highly beneficial.

3.b. We have partnered with many SWCDs over the past decade to co-host Stream Smart programs to help private landowners understand the significance of healthy shoreland and riparian habitat and barrier-free streams, but we have not yet interacted with many agricultural producers directly. This is a group ripe for outreach and interactions that can not only help retain shade for our cold-water streams that harbor economically valuable fish, but also provide habitat for our declining pollinators and birds that feed on pollinators and aerial insects.

3.c. We would like to see technical assistance for the Beginning with Habitat program be available in every region of the state, similar to District Foresters. Such technical assistants could help towns with their land-use planning to balance new development with conservation actions that can help reduce carbon emissions, provide locally sourced foods and outdoor recreation, store more carbon, protect existing natural and built property values, and generally create more livable communities. Given our experience with COVID-19 right now, many more people are realizing the importance of being able to find most of what they need closer to home. This will continue to be an essential goal in the future as we face the increasingly direct impacts from climate change, and we should be planning for the transition now. Furthermore, to support these regional technical assistants, there needs to be a central Land Use Planning Program housed possibly at the Office of Innovation and the Future that can cut across multiple state agencies to provide the technical support for sound land use planning at all levels of government – local, regional within the state, in organized and unorganized townships, and regional across the Northeast. This recommendation also applies to Strategy 4.c.

4.a.ii. This strategy needs to be strengthened to say we should expand our Ecological Reserve System (ERS). Recent research confirms that natural lands with natural disturbance regimes tend to store more carbon than artificially disturbed systems, and can provide an essential refuge for many climate-sensitive species and natural communities. The ERS in Maine is still in its early stages of development and does not yet include representative examples of every natural community in different parts of the state as originally envisioned. This is a perfect time to seize the opportunity to not just maintain, but grow these lands as an important part of the portfolio of options needed to mitigate and adapt to a changing climate.

4.a.iii. This strategy should be strengthened to include evaluating opportunities for not just acquiring new lands, but also managing existing and new BPL and IFW lands that can play an outsized role in providing habitat and refuge for our most climate-vulnerable species and habitats.

4.b. While this might seem like a dreary topic to many, it is absolutely essential to ensuring we can bring together our best thinking about how to balance new development – including new renewable energy projects – with our need for smart growth and conservation of natural and working lands in ways that best prepare us for a changing climate, and to help those species and habitats that are especially vulnerable to climate change to not just squeak by, and not just persist, but thrive.

Finally, this crucial work of addressing climate change is an overwhelming one, which is why the Climate Council wisely created subcommittees and working groups to address individual topics within the issue of climate change. As you are aware, many of these and other recommendations are appropriate for, and will be shared with, multiple working groups, and we look forward to the Climate Council and the individual working groups collectively working together to address these issues. For the topics we have covered in this letter in particular, there would appear to be greatest overlap among the Natural and Working Lands Working Group, the Coastal and Marine Working Group, and the Community Resilience, Public Health, and Emergency Management Working Group. For instance, larger and more frequent storms will increase flooding in freshwater streams, those flooded streams will run into the coastal and marine systems where they will meet higher sea levels, which can all lead to greater risks for public health and safety.

90a. Enterline, Claire Claire.Enterline@maine.gov [replaces 90]

With my apologies, we respectively submit the attached revised version of the comment from the Maine Coastal Program's Coastwise Steering Committee. The version sent last week was a draft and had not yet been fully vetted by all partner organizations, some of whom will be submitting separate comments from their organizations.

Regarding the Natural and Working Lands (NWL) Working Group Strategy 2: "Create new and update existing financial incentives and support for private land management and infrastructure that supports climate mitigation and adaptation", under bullet (e), it says "Increase funding for private and public road-crossing infrastructure, using Stream Smart practices for bridges and culverts, thereby reducing flowing damage and improving aquatic and terrestrial wildlife passage".

Our Steering Committee appreciates the support for increasing habitat and species connectivity, however we urge the NWL Working Group to expand this strategy to specifically include tidal crossings. Currently in development with over thirty Maine partners representing multiple agencies in the State of Maine, federal agencies, academic institutions, and non-governmental organizations, the CoastWise Approach will provide a voluntary set of science-based, field-tested best practices for communities, private road owners, engineers, and other people interested in designing climate-resilient tidal road crossings. With CoastWise, we hope to steadily reverse centuries of impacts to marshes and other tidal habitats by designing safe, low maintenance crossings scaled to accommodate sea level rise and restore natural tidal flow. Maine Coastal Program and partners have initiated Phase 1 of the CoastWise project: development of tools, decision-making methods, and guidance materials; this phase will be complete in fall 2020. Phase 2 will focus on creating and implementing outreach and training for the approach; trainings are anticipated to begin being delivered in 2021.

We recommend that this NWL strategy be expanded to reference how tidal crossings require their own design practices because of very specific and complicated tidal flooding and sea level rise issues that are not present at freshwater crossings, and thus Stream Smart principles and design standards are not applicable to tidal crossings. We suggest the Strategy summary be revised to (changes in bold underline): "Increase funding for private and public road-crossing infrastructure, using Stream Smart practices for freshwater bridges and culverts and the CoastWise Approach for tidal crossings, thereby reducing flowing damage, supporting habitat, improving aquatic and terrestrial wildlife passage, and responding to sea level rise".

91 **Katherine Forest** kathar679@gmail.com

Which strategies seem particularly promising to you?

Strategy 1, Creating a dedicated, sustained funding source to conserve natural lands to increase carbon storage activities. While conservation of working forest and agriculture are also important, our natural lands have been undervalued the most for their contributions to our economy and our health. Undeveloped land has a higher financial value once it is developed than when it was open; right now, there is no mechanism for towns, counties, business or private owners to create financial gain through undeveloped land, and therefore the incentive is to build on land to create revenue. We must create financial incentive to leave our trees standing, our marshes wet, and our meadows overgrown.

Do any of these strategies concern you, and if so, why?

Strategy 1.b. Conserve areas of exceptional biodiversity value….Considering what we know about the urgency of mitigating climate change, it concerns me that we would assign value to certain parts of our natural landscape over others. Of course, areas of exceptional biodiversity must be conserved, but given the prominent role that trees must play in our carbon capture strategy (and the complete absence of any other technology for carbon capture), in my opinion, all undeveloped land must be conserved, regardless of the information on Beginning with Habitat maps. Data only tells part of the story. Biodiversity, including rate and threatened species, is of course important, but we must conserve all of Maine's forest and wildlife for its role in ecosystem development and climate mitigation. A 30-acre fir-hemlock forest that is home to woodfrog, spotted salamander, duck, grouse, deer and

wild turkey may not score high on any endangered wildlife rankings, but serves an important role in maintaining the health of the overall animal and plant populations in our state. Additionally, many forested sites that are home to bear and moose are being cut down for solar development. We must maintain a critical amount of forested land in Maine to maintain or grow the population levels of all of our beloved animals, not just the rare and endangered ones. Furthermore, our forests are getting more and more fragmented with residential development, and therefore conserving one area over another based on standard data may ignore said forests' role as a wildlife corridor, or that it may be the only such forest in a radius of several miles, and therefore, its elimination would cause said populations of the above-mentioned animals to die out.

Strategy 2.b.iii Update the current Open Space Current Use Taxation Program

I am not familiar with the Open Space Current Use Taxation Program, but if this is to be the mechanism to keep undeveloped property as forested, it is in for a steep battle.I see so much forested land for sale in the greater Portland area, in Scarborough, Westbrook and Falmouth. In heavily populated areas and commercial areas, the towns are looking to increase their tax revenue by development of commercial and property, because developed commercial and residential property yields more tax revenue to towns than undeveloped land. However, all Mainers enjoy the state's natural wildlife, even us who live in cities like Portland. I love the fact that there are coyotes in Portland, and I can go to a local park to see deer and other wildlife tracks. We cannot lose our wildlife, even in densely populated areas, or even in towns in search of higher tax revenue. Development of our untouched tracks will lead to an overall population density loss for birds, deer, moose, bear and coyotes in our urban and suburban neighborhoods.

What is missing?

Overall, I think the strategy of financially incentivizing forested landowners and farmers to not develop their land is a good one. Currently the financial incentives lie with commercial development of a property because currently commercial development of a property is the only area for financial growth for a landowner. Our current economic system when it comes to land management is eating up our forests because there is no way for a landowner to make a profit or make money off of undeveloped land. Therefore, we must put a financial value on trees, forests, shrubs and meadows and recognize their contribution to our health and the health of our planet. We all inherently recognize the personal and ecological value of undeveloped land, but we must put a financial value on it in order to preserve our forests and farms to combat climate change.

However, simultaneously we must remove financial barriers to developing renewable energy projects on previously developed properties. Currently, it is cheaper to build solar sites on undeveloped property than it is to build solar on developed property, due to the permits, zoning, and environmental barriers in place on developed property. Just like water rolls downhill, undeveloped sites are preferentially being developed for solar over developed sites due to the fact that there are fewer restrictions on development of undeveloped property. We must fast track the permitting process for development of renewable energy projects on previously developed land, such as landfills and brownfield sites, and remove zoning issues for solar and wind projects on urban and suburban sites.

We must also find a means to financially reward commercial property owners for development of community rooftop solar projects.

92 **Reed Coles** **info@hhltmaine.org**

Generally, the report seems to overlook coastal Maine, yet the coast will see significant changes as a result of sea level rise: flooding of valuable intertidal shellfish areas, inundation of salt marshes that are highly productive habitats essential to a vibrant fishing industry, and increasing acidification of the ocean from local sources (as opposed to global ocean acidification) with drastic adverse effects on important marine resources. For example, salt marshes are among the most highly productive habitats in the world. Identifying lands which will allow their

migration inland as the sea level rises are essential to salt marsh resiliency. I think the council needs to recognize that climate change and natural resiliency in Maine include a lot more than our forests, farms, and mountains that the council seems to be focusing on and take a much more careful look at the impact of climate change on our coast, its contributions to our biodiversity, and how we can ensure its resiliency.

Specifically:

1. Strategy 1: The Department of Marine Resources has considerable mapped information regarding valuable shellfish areas, eel grass beds, and marine fisheries that ought to be included in the list of information sources to determine areas of exceptionally valuable biodiversity. In addition, since the Beginning with Habitat maps have accuracy issues due to their scale and data limitations, the council ought to try to utilize local sources on information from town Conservation Commissions, local planning departments, and land trusts that may well have detailed information not included in the BwH and other state maps.

This strategy also uses the term "exceptionally high biodiversity value". The report doesn't define the term, but it seems to me to be a rather excessive limitation. There are many areas that may not have "exceptionally" high biodiversity value but are critical to the resiliency of Maine's natural resources in the face of climate change. They should not be left out of the state's plans.

When revising funding scoring criteria, coastal mitigation and resiliency should have equal billing with inland mitigation and resiliency.

2. Strategy 2: Private coastal lands management should also be considered when creating new and updating existing private land management and infrastructure to support climate mitigation and adaptation for the same reasons. Public road crossing infrastructure also affects resiliency of our valuable coastal natural resources.

3. Strategy 5: Again, the report seems to ignore coastal resources.

Support for the eventual climate action plan will depend on people affected by climate change along the coast as much as on people inland. Leaving that aside, sound public policy about climate change should be comprehensive and not be seen as focused on only some areas of public interest.

93. **Merle Parise** mjptree@tidewater.net

It is my concern the Climate Council is putting the buggy in front of the horse. First, adaptation can reduce damages. Clean development mechanisms mitigation may or may not reduce damages. For example, agronomic studies in the United States indicate that strategies like genetic engineering of crops, and more efficient irrigation systems, tended to reduce damages. Second, some adaptations are ex-post meaning they could be undertaken after the climate has changed---whereas other adaptations are ex-ante, requiring an ability to anticipate and forecast climate variability.
Concerning sea level rise governments along the east coast of the US may decide to evacuate high-risk areas permanently, or not to, as the U.S has done on the Mississippi in some flood plain zones. Although it is easy to believe that ex-post adaptations would be undertaken, it is less clear whether ex-ante efforts will be widespread. Maine simply may not have the political motivation or money to react to potential risks. Additionally, at first there may be an efficient amount of adaptation. Adaptation is efficient only if the cost of making the effort is less than the resulting benefits. Prominent experts point out that public policy should encourage efficient adaptation, and implied that the impact literature has generally not examined the efficiency of adaptation. Many of the impact models that have been constructed either ignored potential responses by both individuals and societies or introduced these responses in an ad hoc fashion. Although efficient adaptation responses can reduce the overall costs associated with climate variability, inefficient responses can actually increase costs. Second, it is important to distinguish between private adaptations done only for the benefit of the actor making the decision, and joint adaptations where there are many beneficiaries. Self-interest will motivate most actors to engage in efficient

private adaptation. The principal doubt about private adaptation concerns the question of how widespread the ex-ante efforts will be. Self-interest, however, will not lead to efficient levels of joint adaptation. Joint adaptation will be efficient only through government action. Further, political forces are likely to encourage even governments to engage in inefficient adaptation behavior. It is not at all clear whether efficient levels of joint adaptation will be undertaken.
In the Strategies Proposed by Maine Climate Council's Natural and Working Lands Working Group report I did not read any real meaningful analysis of the risk from climate variability. First the government must measure the risks, meaning to understand the cost of the response before it can develop policy to mitigate climate variability. Second these risks must be ranked for their costs and long-term efficiency.
I have used this technique when I developed climate risk evaluations in Maine, Mexico, and Afghanistan. I have had significant input from climate forecasts prepared at my request from NASA and additional input from the USDA Forest service North East Decision model (NED) indicated Maine would have an increase in precipitation and temperature and subsequently changes to forested habitat. The precipitation and temperature increases are on track with the model NASA ran for a research paper I wrote 15 years ago. The USDA US Forest Service NED decision model forecasts changes to habitat for tree species. These changes are losses and gains of habitat for distinct species using the IPCC scenarios.
I am all for guidance and incentives to protect the public health and welfare from climate variability. But it must be done efficiently within a budget that has strong input from our state agencies and strong bipartisan political support. The concern, capacity, and contractual environment in Maine will play a key role in adapting to climate variability.

94.